

DATA PREPARATION

We have the capacity to punch your peak loads, file setups on regular work on 80 column cards.

Peter Merrick
ASSOCIATES

Phone 01-888 6047 Croydon

Computer Weekly

Thursday, May 6, 1982

Univac launches a twin-pronged attack

by Kevin Cahill

A POWERFUL two-pronged attack on both the IBM mid-range market and the personal computer market was announced this week by Univac.

The drive on the IBM 4331 market is being led by a new entry level machine called the 1100/61 B1.

Joe Pascoe, UK marketing manager for Univac, claims that the B1 is 25% more powerful than the IBM offering and is price competitive. The entry level price for a 4331 is around £150,000.

Perhaps more important to existing or potential Univac users is the fact that the B1 represents a lower start point than the existing Univac 1100/61 C1, which is about 20% more powerful than the B1.

Pascoe claims that the B1, which is field upgradeable to the C1, will give new entrants access to a growth path all the way up to the top-end 1100/64 multiprocessor systems.

According to Pascoe, orders for the Univac 1100/60 mainframe range were 12% up on last year, with particularly strong growth experienced in the past three months. The upsurge in the first quarter this year was most noticeable in the International division, he said.

Univac's route into the personal computer marketplace follows that taken by DEC with the VT 100. Univac has produced a board upgrade to the programmable UTS 40 terminal, which allows a user to run CP/M with 64K of additional RAM.

The upgrading of the UTS 40 gives Univac users access to the huge database of CP/M application software which now exists, as well as enabling the UTS to be used as a personal micro and a remote intelligent terminal.

The product is expected to be available to UK users in October. No price was quoted by Univac but a field upgrade price of about £500, and perhaps half that for the terminal with the board included is what existing users expect to pay.



PASCOE... "B1 25% more powerful than IBM offering."

Scicon to try unexploited UK field

by Philip Hunter

THE largely untapped market for facilities management services in the UK is to be exploited by a joint venture between Scicon and US software products giant Applied Data Research.

Scicon will offer ADR's full facilities management service on IBM computers and attack the present UK dominance of the market by Hoskins.

Under a facilities management contract, a company can divest itself of all responsibility for running its data processing operation. Companies switching to a different make of mainframe, or moving from a central to a distributed net-

work but who lack computing experience, are prime candidates for such a service.

The facilities management market in the UK has been static, running at just £9 million for the last two years out of a total UK system services market worth £600 million.

The US government invests heavily in facilities management, while the UK government has little to do with it. But Gerald Watson, head of the Central Computer and Telecommunications Agency, has said that there is a great deal of potential for more business in facilities management.

Doug Eyeions, Computer Ser-

vices Association director general, says he has been urging the government to put more work out to facilities management companies.

But Scicon's processing control manager Chris Baker is sceptical. "I don't see the government changing its approach," he says, adding that the service companies are likely to remain the biggest users of facilities management.

Eyeions believes the Scicon deal is significant and expects it to have a salutary influence on the overall UK facilities management market.

Amdahl is one of three major sub-contractors under BDS, the



The US DoD contract was awarded in the face of IBM's competition.

Big break for Amdahl

by Kevin Pearson

A MAJOR slice of a massive US Defence Department contract has been awarded to Amdahl, the plug compatible computer manufacturer, in the face of strong competition from IBM.

As part of a contract whose total value is \$655 million, Amdahl is to supply the US Army with 20 470 series computers for its five data centres. Four of the machines will be delivered next year, and the other 16 over the remaining period of the 10-year modernisation programme, code-named Project Viable.

The deal is worth \$45 million to Amdahl, about 8% of its annual turnover. It is the largest single order the company has received, and it comes at the right time for Amdahl, which two weeks ago reported first quarter profits down by over 50% to \$4.2 million.

Amdahl is one of three major sub-contractors under BDS, the

large US systems house, for Project Viable. The others are IBM, which is to supply 4341 processors to 47 local US army sites around the world, and US software products giant ADR.

The major competition for the EDS/Amdahl tender for the Data Centres came from Computer Sciences, with IBM supplying the hardware.

ADR is to supply a major database system based on its Datacom products. In the longer term a worldwide network will be built-up under ADR's Dnet networking system.

The software deal is worth \$14.2 million over 10 years, the biggest single software contract that the US Army has ever issued.

Other companies involved in the BDS contract are NCR, which will supply front-end systems for the project, and Storage Technology, which will provide the project with disc drives and other peripherals.

SIEMENS

Ink-Jet printing for OEM and end-users

Tel. 09327 85601
Ext. 134 & 135

ikes pcc

Tele. 01-404 0101

CALL YOUR DATA PROCESSING NEEDS AND ACCESSORIES

1400W
1100W
1100W
1100W
1100W
1100W
1100W
1100W
1100W
1100W

Computer Weekly

Thursday, May 13, 1982 Number 808 30p

Three personal machines launched

Hard-sell for DEC micros

by Boris Sedacca

THE world's largest minicomputer manufacturer, Digital Equipment Corp, has at last put its full weight into the microcomputer market. Despite a range of products which show no strong advantages over its competitors, the company represents a potent new force in the field through the strength of its existing marketing channels.

In addition to sales through existing OEMs and terminal distributors it will also be selling direct to large accounts. And in the near future it plans to sell to users through office equipment vendors and retail chains.

DEC has launched three separate products as part of its personal computer family, two of which are based on existing or re-engineered minicomputer architectures.

For the third product, however, the company has turned to an outside manufacturer for microprocessors, abandoning its past strategy of continually squeezing down its minicomputer architecture on to fewer chips.

At the top-end of the range is the Professional series based on the PDP-11/23 processor chip with 256 Kbytes of memory and multitasking operating system, followed by the DECmate II word processor based on the old 12-bit

PDP-8 minicomputer with optional capability to run the CP/M operating system.

But the most significant product is the Rainbow 100 at the bottom end, running CP/M applications on both the 280 eight-bit processor and the 8088 16-bit processor.

The 8088 is used on the IBM Personal Computer which has yet to be launched in the UK. At present, the only production machine available in the UK which runs the 8088 is the Sirius 1 sold by ACT Microsystems.

Commodore has announced its Series 700 for September which will support the 8088, and the UK manufacturer LSI Computers is planning to bring out an 8088-based micro in the summer with help from the government under its Microprocessor Applications Project (MAP) support scheme.

DEC will use the Rainbow to extend its customer base into the mainstream personal computer market, and to move that customer base up into its minicomputer range.

Some software products and facilities announced with the personal computer family for instance, will be available only on the Professional series based on the PDP-11. These include a graphics capability and a Telephone Management System option which dials and receives phone calls.

DEC will use the Rainbow to extend its customer base into the mainstream personal computer market, and to move that customer base up into its minicomputer range.



CAPTAIN HILTON... We don't even care if the Russians have it.

Leasco helps out Navy in the Falklands war

by Philip Hunter

AMID a mist of secrecy, the Royal Navy has allowed a brief glimpse of an advanced military information system which is currently being used in aid of naval action in the Falkland Islands.

The combination shore- and ship-based system provides naval commanders with a powerful tool to monitor the movements of enemy aircraft and ships.

It was developed on Ferranti hardware by Leasco Software of Maidenhead, and delivered to the Navy last August.

Since then the system, known as Britomex, has been implemented at Navy headquarters and in three ships, although a Ministry of Defence spokesman says that it was not on the ill-fated Sheffield destroyed by an Argentinian missile two weeks ago.

Until Britomex was developed, the Navy was forced to rely on ship detection methods (such as helicopters) which gave little freedom to manoeuvre outside the maximum range of tactical weapons carried by the enemy.

Now, ship and aircraft locations together with security classifications can be plotted continuously on a large shipborne terminal which also has the ability to draw coastline and contour maps of any part of the globe.

The terminal screen can be interrogated by a light pen, which when placed on a particular ship, brings forward the original details of the system.

Data in the system is built up on shore using details that are readily available on existing teletype networks. The information is then transmitted to ships and remote

maritime headquarters by communications satellite.

Since the system has been delivered the Navy has been back to Leasco for a number of enhancements. These include a "dead reckoning facility" - the ability to extrapolate information, which is typically several hours old, to yield present estimated positions of ships and aircraft.

Britomex took 15 months to develop, for a price of £900,000.

It was conceived by Captain John Hilton of the Royal Navy, who emphasises the importance of the system's ability to communicate messages in a code of frequently changing format. As a result there is no need to make a big secret of the system.

"We don't even care if the Russians have it," says Hilton.

NEWBRAIN

FROM

Grundy Business Systems

SOMERSET ROAD
TEDDINGTON, MIDDLESEX
TW11 8TD

Registered Office
Tel: 01-877 1171/8
(Telex: 928728)

NEWS BRIEF

Burroughs' desk-top micro

BURROUGHS last week became the latest mainframe vendor to offer a desk-top computer. The company's B21 and B22 systems, designed and built by Convergent Technologies of Santa Clara, California, will offer maximum memory capacities of 512K and 640K, respectively, with typical selling prices from \$8,000 to \$20,000.

The new micros represent Burroughs' attempt to recapture its once dominant position in the small systems market.

More jobs

MANAGEMENT recruitment in electronics design and in computing is on the rise again, reflecting a growing confidence in the future. Appointments advertised in research, development and design - particularly engineering and electronics - in the first quarter of this year showed a 90% rise over the same quarter last year, while computer jobs, although growing at only 24% over the year, show a 60% increase over the last quarter of '81.

£3m bank order

THE FISH banking is set to enter the electronic age in a big way as National Westminster orders £3 million of computer equipment for its Epsom office.

Autumn Gateway

ICL has announced Gateway software for its Bulletin private viewdata system on the ME29. Gateway will be available in the autumn, and will allow access between private viewdata services using Bulletin and national viewdata systems such as Prestel.

CENTRONICS Diablo olivetti Hazeltine TEXAS INSTRUMENTS

TERMINAL CHOICE

IBM 3101

ASCII VDU

- 7x14 dot matrix
- Green phosphor screen
- Buffered printer interface
- Character/block mode transmissions

UK-STOCK

RAIR 01-836 6921

8-9 Upper St. Martin's Lane London WC2H 9EQ

Rent-a-package in July

by Robert Parry

BRAVING the troubled waters of software copyright, an offshoot of mail order business Apple Orchard is to set up a microcomputer software library for short-term rental.

The Software Rental Bank hopes to get going in July with a list of around 140 well-known, though not necessarily widely used, application packages for the Apple II. Other micros will be added later.

The packages will include business products - accounting packages, word processing software, database management systems and the like - from software houses including ACT, Microsoft, Systems, TABS and CompSoft. Apple Computer's own packages will be on offer too, as will DJ 'AT' Systems' The Last One.

Joint managing directors John Chesney and David Imberg see the main problem as the pirating of software - renters hiring packages to make copies, along the lines of what happens with record libraries.

"The software suppliers are worried too," says Chesney, "but we believe the existence of the software rental bank will expand their market by making it easier to get access to things."

The argument is that suppliers will gain more through greater sales - Chesney is hoping for a high conversion rate of rentals to sales - than they will lose through illegal copying. He also reckons, optimistically perhaps, that most renters will be companies unwilling to run risks with unsupported pirated software.

Computer financing

Standbrook House, 2-5 Old Bond Street
London W1B 3JB

FOR SALE OR LEASE

3033 - US 12, 14
3032 - 8 MEG
3370 - SEVERAL A & B
AVAILABLE MAY, JUNE, JULY

TELEPHONE 01-404 2388 TELEFAX 01-404 2328

High performance editing graphics for around £1250

AutoGraph RANGE

- Features 612 x 250 plotting resolution
- Links with graphics printer to provide complete low cost graphics workstation
- Fully software compatible with Tektronix 4010/4012 and 4013
- Graphics Hardware Cursor, emulating user controlled crosshair cursor of the 4010 range
- Can operate as either full feature Teletype alpha numeric terminal or as graphics terminal

Autograph from Data type

National Sales Office
Data Type Limited
Unit 210, Springfield Industrial Estate
Overclay Way, Chelmsford, Essex
Willingdon SS4 6YR
Tel: 0462 501 818 Telex: 491700

Printed in Great Britain by OB Limited, Shepperton, Middlesex. Published by IPC Electrical Electronic Press Ltd, Queensway, Grant, Sutton, Surrey SM2 5AS.

All smiles at ICL conference

by Andrew Thomas

SMILING faces were the order of the day as ICL's UK users met for their annual conference last week.

In 1981, worried delegates sent a telegram to the Prime Minister with an urgent appeal for reassurance about the company's future. This year, with shares back above the magic 50p mark, the atmosphere at Eastbourne was markedly more optimistic.

Director of product marketing, Niall Badie, re-affirmed ICL's policy of surrounding IBM mainframes with ME29s and DM1s, and again denied reports that ICL was about to go IBM plug-compatible or adopt its SNA communications standard in place of ICL's own Information Processing Architecture (IPA).



BADIE... "We're sticking with international standards."

"We're sticking with international standards," said Badie. "IPA sells on superior price/performance."

management and excluded the Press from managing director Robb Wilmore's address.

But according to delegates there was a distinct emphasis on the old DME emulation system, rather than its supposed replacement, CME, which allows both native mode and alien ordercode execution simultaneously.

"Maybe DME is making a comeback," mused one delegate. But it could mean that ICL is not exerting as much pressure as expected on 1900 and System 4 users to move to VM8 2900.

Considerable interest was created by Wilmore's announcement that the DRS range will shortly be capable of running the CP/M microcomputer operating system as a subject program under the DRX operating system.

In an unexpected about-face, ICL suspended its policy of open

INSIDE THIS WEEK'S ISSUE

Criminal sanctions for data abuse... 2

NAS beats IBM to 20 mips machine... 3

Compec Europe launch-pad for UK firms... 4

Management buys up services company... 9

Software Month on financial planning... 17/23

Videotex 82... 2

No Fusion plans for UK... 3

Move into UK graphics... 4

User wins damages... 5

Micro News... 6

Software File... 7

Company News... 8/9

Systems Thought... 10

Downside by Chad... 10

Letters... 11

Op Spot... 12

Programmers Page... 13

Puzzler... 13

Books... 14

People/Diary... 16

Products... 26/27

Contract Jobs... 53

Sales Hit... 55

Jobs: Pages 30/55

TODAY'S WP SYSTEMS.

FOR TOMORROW'S DP INSTALLATIONS.

See the Lextron Corporation word processors from Data Logic in action at the International Word Processing Exhibition... and see for yourself how today's most advanced WP systems are being developed to interface with tomorrow's DP configurations. Our technical experts will be on hand to advise, assist and answer your questions at:

INTERNATIONAL WORD PROCESSING EXHIBITION, AVON SUITE, STAND 6, WEMBLEY CONFERENCE CENTRE, 25-28 May.

Or contact: Peter Evans, Marketing Director, Data Logic Limited, 29 Marylebone Road, NW1 5JX, 01-486 7288.

DOL

Towards the total system.

RAISON . . . No need for Data Protection Authority

MACKENZIE . . . New strategy to provide a migratory path.

Deliveries of Series 900 will be within four months.

THE British Approvals Board for Telecommunications, which will test devices to be attached to the telephone network against standards from the British Standards Institution, is to be incorporated as a self-financing non-profit wholly-owned subsidiary of the British Electrotechnical Approvals Board.

MINALS



ICL has announced its Atlas MVS/XA.

ANALIS Texas Instruments ANALIS Engineering DEC ANALIS Hewlett TEC Teletype ANALIS RS Anadex A J Digital ANALIS

Storage Technology Ltd., Churston House, Portsmouth Road, Esher, Surrey KT10 9AD. Telephone Esher (0312) 610041.

...and the

Northern Office: Tel: Harrogate (0423) 5008
Scottish Office: Tel: Strathaven (0357) 2257

Storage Technology Ltd., Churston House, Portsmouth Road, Esher, Surrey KT10 9AD. Telephone Esher (0312) 610041.

Compec Europe provides launch-pad for 13 British firms. Kevan Pearson reports from Brussels

UK companies make push on to Continent

A MAJOR push into Continental Europe by 13 UK companies had its send off in Brussels last week at Compec Europe, sponsored by Computer Weekly.

The 13, ranging from employment consultants to software and systems houses to microcomputer manufacturers were taking part in a joint venture backed by the Business Equipment Trade Association, Beta, and the British Overseas Trade Board.

A prominently displayed sign, "Recherchons Agent", literally "Looking for agents", was on each of the companies' stands. Many of them were at Compec Europe for the first time, using the exhibition as a way of feeling out the market for their services or products, as well as looking for potential agents and distributors.

Participation by the companies was part-financed by the BOTB, and organised by Beta.

Some of the companies, in only the second or third year of operation, would not have made the exhibition without the assistance of BOTB/Beta joint venture.

It was the second such venture since Compec took over the Brussels exhibition in 1977. The first took place in 1980, but last year there was not sufficient interest by potential exhibitors to qualify for BOTB help.

Phil Bowe, a director of Tamaya, one of the few software companies at the exhibition, said that in the first half-day the company received enough serious interest in its products to justify its presence. Tamaya had a variety of equipment and systems on show, including Extel's Hi-net local area network, and a manufacturing control program which is built around the MDS relational database for microcomputers.

Tamaya uses both products in its own development work. "We have been using MDS for several months," says Bowe. "It's very powerful, and has cut our software development time by about 45%."

David Fear, marketing director of British micro maker Comart and former international marketing director of Prime Computer, said his company had made some "very good contacts" at the show.

Fear joined Comart in January to provide international sales expertise for Comart's push into Europe. Comart Europe is just one aspect of the company's strategy to tap the market.

A few of the companies, like Dico Electronics of Basingstoke and Plessey Microsystems, already have Belgian distributors. Their presence was essentially to introduce new developments and to back-up the local agents.



FEAR... "Very good contacts at the show". With him (left) at Compec Europe is John Lamb, marketing director of Comart.

Micros out in force at exhibition

THERE was a strong micro flavour at Compec Europe, but most were shown by local distributors rather than the manufacturers.

The British flag was flown by Comart, Dico Electronics and Tamaya.

County Computers, of Worcester, showed what is effectively a repackaged Apple II called Ac-

claim. It is based on an Apple II board, with an integral hard disc system, and an extensively redesigned box and keyboard.

The IBM Personal Computer was also there, but not with IBM. Microcomputerland seems to have started a trend with its unofficial importation of IBM's micro. A Dutch company called Vollwood

Computers has now followed suit and is marketing the machine in Holland and the Benelux countries.

The Japanese presence was marked by Sand Computer Systems' European distributor Egemin, which showed most of the Sord range, except the 16-bit M416.

Long-term future for bubble-based systems

THERE is still life in bubble memories, in spite of the withdrawal of several big name manufacturers last year.

At Compec Europe Plessey Microsystems showed a 24 Mbyte mass memory system, based on one Mbyte bubble memory chips.

It has been marketing a six Mbyte system for some time, based on 256 Kbyte chips.

The bubble market looked like collapsing last year when Texas Instruments, National Semiconductor and Rockwell all announced that they were stopping

production of bubbles. Now the only mainline manufacturers still involved are Motorola and Intel. Plessey, according to European sales manager Phil Burnley, sees a long-term future for bubble-based systems in replacing hard disc systems.

Geisco finance package for IBM equipment

by Maggie McLening
AN in-house financial modelling system for IBM and plug-compatible equipment has been launched by time-sharing bureau Geisco. A version for the IBM Personal Computer is expected to follow.

The launch is in line with the trend for bureaux to widen the scope of their services. It follows a prediction last year by Gregory Llemant, president of Geisco, that by 1985 90% of the company's revenue would come from this type of service, rather than its traditional time sharing.

He also said that Geisco had set a target to triple current revenues to £1.5 billion by 1986, and the CPL-Tactix system is the first of a series of packages aimed at achieving that figure.

The new package, called CPL-Tactix, was originally developed by the Swedish software house Mercur Planeringspraktik. It is a

table database, similar to a greatly expanded version of VisiCalc. Any Fortran-readable file is formatted into a matrix with a maximum size of 10,000 items. It can be linked with up to 500 other tables in a single library, and with up to six other libraries.

One of the most important features of the system, apart from its set-handling abilities, is the option of colour graphics and comprehensive screen handling if used with an IBM 3270 interface.

Commercial release of the product to run under MVS or CEM/CMS operation systems is due on May 15.

Available both as an in-house system or on the time sharing bureau, CPL-Tactix costs £11,000 for a complete module including support and software updates. Geisco already has four time sharing customers in the UK, with the first US client set to install it in June.

£90 million Videotex order

by Jack Gee
FRANCE has won its biggest export contract for videotex terminals. Tymshare in California has placed a £90 million order with Matra for 560,000 units which Tymshare will distribute in the US with its electronic mail and database services over the next ten years.

The order is a follow-up to last summer's initial contract between Matra and Tymshare for delivery of 100,000 terminals.

The new Tymshare order is a major success for Matra's chairman, Jean-Luc Lagardere. He regards the US as the launching pad for an attack by his company on the international videotex market.

TRIVECTOR

BRITISH-MADE MICROCOMPUTERS AT THEIR BEST

HARDWARE
MULTI-TERMINAL TO 16 VDUS
MULTI-PROCESSING TO 4 PROCESSORS
WINCHESTER DISC TO 100 MB WITH SECURITY TAPE

SOFTWARE
PACKAGES FOR ALL BUSINESSES
CONSULTANCY AND TURNKEY SYSTEMS
MULTI-PROCESSOR MICROCOMPUTER, CP/M AND MP/M OPERATING SYSTEMS

TRIVECTOR COMMERCIAL LIMITED - SUNDERLAND ROAD - SANDY BEDS - TELEPHONE 0767 82222

SALES BRIEF

Ferranti £1m oil rig deal

FERRANTI has won a contract from Conoco for a £1 million computer system to adjust flow movement and monitor cable tension on the world's first tensioned oil production platform.

The system will take account of loading and weather conditions, keeping it in its proper position. Hutton North Sea oilfield. It consists of two Ferranti Argus 7021 minis with telemetry units, drives and other peripherals.

Picture library

SATISFACTION with the Logica Context teletext system it installed in 1980 was an important factor in inducing the Austrian broadcasting organisation ORF to place a £750,000 order with Logica for a computer-based digital picture library with library management facilities. The system is believed to be the largest of its kind and the first to use the new international digital television standard.

Tesco plans to have a total of 15 stores operating PoS installations this year.

Laser scanning requires all goods to be bar coded in order that the product may be identified by the hardware at the checkout. Nielsen estimates that over 70% of goods sold through supermarkets

Tailor-made

ICL has won a £250,000 order for 9500 series point-of-sale terminals, tag readers and floppy disc controllers to be installed in the branches of Burton's, the tailors, in France. One or two ICL 3511 minis and a controller will be installed in each branch to deal with sales transactions and stock movements. Summaries will be transmitted to Burton's mainframe in Paris overnight.

CAD debut

GKN Technology has bought its first implementation of the Num Data Vision Euclid computer-aided design and manufacturing system to be installed on a Digital Equipment VAX in the UK. The system is marketed jointly by DEC and Matra throughout Europe. GKN is installing it on a VAX 11/750 and will use it for a range of applications from drafting to solid modelling in conjunction with its own analysis software.

20th system

BOLINGBROKE & Wadley, of Chelmsford-based department store has taken delivery of the KPG-Store system from Software KPG. It provides sales ledger, purchase control and departmental reports. The £27,500 order is based on a 128K Data General G350 system.

Graphics link-up

INTERNATIONAL architectural and building firm JT Design Build has installed a £125,000 Calcomp IGS 500 computer-aided design and drafting system to be used in producing design schemes and working drawings. It will also be linked to the firm's existing Systime VAX 11/750 to transfer graphics and data files for quantity estimating and technical calculations.

Funds transfer

APPLIED Communications has won its first major UK banking contract with a deal to supply an online electronic funds transfer system to Bankers Automated Clearing Services. The system should provide both shorter response times and additional facilities at BACS Edgewood data centre, and is based on Tandem Non-Stop II technology.

Bar code scanning for 1,000 UK retail outlets by 1990 — market survey

by Andrew Thomas

BY the end of the decade, at least 1000 UK retail outlets will be using electronic point of sale equipment incorporating laser scanning techniques, according to market survey company A. C. Nielsen.

There are currently only nine installations in the UK. Each of the major supermarket chains has one, with Key Markets leading the field with three.

Nielsen says that if the US trend towards the new PoS technology is followed, up to 50 grocery outlets will be equipped by the end of 1983.

Tesco plans to have a total of 15 stores operating PoS installations this year.

Laser scanning requires all goods to be bar coded in order that the product may be identified by the hardware at the checkout. Nielsen estimates that over 70% of goods sold through supermarkets

currently carry such codes, and that in many product categories over 90% of items are already suitably coded.

Nielsen has been appointed by the Article Number Association as the central UK clearing house for data collected through PoS systems operated by retailers.

But a report* from the Distributive Trade Economic Development Committee (EDC) predicts that the magic 1,000 mark will be reached nearer 1985 than 1990. It says that Spar, the group of small independent supermarkets, expects at least 1,000 of its members to be using laser scanners by the end of the decade.

The EDC maintains that, for the majority of UK shopkeepers, their first encounter with information technology will be with PoS equipment. Other aspects of new technology lie further in the future. Electronic funds transfer (EFT) and shopping from home via

viewdata are cited.

The NEDO report calls on the government to give the distributive trades more help in the form of additional funds "to encourage more widespread introduction of new technology."

One of the potential problems highlighted in the report is the education of the general public in order that they both understand and accept the reasons behind the disappearance of price tags on goods.

In the US, where almost 5,000 supermarkets are using PoS laser scanning, retailers are only now beginning to discontinue item pricing after five years' use of the equipment. There has been a fierce resistance from consumer groups, who insist that it is vital that shoppers can price their purchases as they go into the trolley.

*Technology: The Issues for the Distributive Trades. NEDO Books, Millbank Tower, Millbank, London SW1P 4JX. Price £3.



"New technology will spread to at least 1,000 retail outlets in UK by 1990."

User wins Burroughs damages

by Howard Karten

ANOTHER small business computer user has won a legal suit against Burroughs in the US. The case, involving a B800, comes on the heels of a recent victory for Texas-based Nelson Specialty Company, which won its case but was awarded no monetary damages.

Some 160 lawsuits involving Burroughs small business systems, mainly the B80 and B800, are outstanding in the US.

In the latest case, Century Automotive Machines, a Twin Falls Idaho B800 user, had sued for \$335,000 in actual damages and \$500,000 in punitive damages. The jury in Idaho found for Century, awarding \$47,200.

Thomas Stephan, Century's counsel, indicated that he might appeal against the award on the grounds that the judge rejected a plea for punitive damages.

New Hampshire attorney Thomas Christos, who has been coordinating a number of lawsuits against Burroughs, said the company's failure to attempt out of court settlements was "a shortsighted, dumb outlook."

'Non-stop' US legal battle

by Boris Sedacca
"NON-STOP", or resilient computers have become the focus of a legal battle in the US as companies prepare for the expected rapid growth in the market.

The company which pioneered non-stop computing, Tandem, has taken a newcomer, Stratus, to court, alleging that Stratus is using false advertising to knock the competition.

Stratus offers a hardware-based solution to non-stop computing which it claims is superior to Tandem's NonStop. Reduced application development time and lower operating system overhead without the need for complex error detection and recovery software is claimed.

Stratus also claims to offer growth by adding "processing modules" up to a maximum of 32 to support up to 2,000 terminals, against the "traditional upgrade approach" of removing older processors and replacing them with new ones.

Stratus, formed in 1980, introduced its first product late last year. The Stratus will be marketed in Europe by Olivetti, which demonstrated the system at the Hannover Fair.

Agency offers DP 'temps'

COMPUTER staff looking for contract work can now make use of one of Europe's largest recruitment agencies, Specialist Computer Recruitment, SCR. After seven years' involvement in permanent recruitment for the computer and high technology industries, SCR is setting up a new division to handle temporary assignments.

SCR's permanent recruitment division claims to be able to recruit any staff required by its clients, from trainee operators to board level. The temporary assignment division, however, requires a minimum of three years' computer experience from its contract staff to provide the level of expertise demanded by its clients.

Contractors can either be self employed, or work as salaried staff for SCR.

The division will work from SCR's existing offices in London, Manchester, Birmingham, Brussels and Amsterdam, and plans to move into the international arena in the near future, after building a solid base in the UK and Europe.

A spokesman for the division said: "There's a much better service that can be offered to both clients and contractors. We intend to offer that service."

The TOTAL Answer

No1

for rent or sale of mini computer systems

Hamilton Rentals Limited
Hamilton House North Circular Road London NW10 7UB
London 01-961 6777
Birmingham 021-238 3561
Manchester 061-848 8338/8434

Central Scotland 0501 43182
Aberdeen 0224-28301

SPECIAL INTRODUCTORY OFFER!

SYSTEM OFFER YOU ALL THIS FOR ONLY £24,995 — WITH SCRIBE!




Offer expires 5 July 1982 and is subject to availability.

The Electronic Office starts here. For the price of a four station word processing system SYSTEM offer you a full computer system which can grow easily with your business.

The powerful, proven DEC® 11/24-256KB processor heads up the system, which includes 2 x 10 megabyte discs, 50 cps console printer, 160 cps printer, 45 cps letter quality printer, 4K advanced visual display units, RSX-11M real time operating system and SCRIBE-11M word processor, as your initial software package.

Because the system is based on a powerful general purpose computer, all aspects of which can be readily expanded, you can add Sales/Purchase/Inventory Ledger, Payroll, Order Processing and

Stock Control software step by step. And SCRIBE won't block out any of these functions — in fact SCRIBE will work with them.

The full service we pride ourselves on. Call SYSTEM and we could have your system installed and running in just 2 weeks. Installation and training is free.

End-user support at all levels is a very strong point with SYSTEM. Hundreds of satisfied customers in the business and scientific world testify to the high level performance and reliability of SYSTEM systems and service. The only way to computerise with such capability at such an economical price is to get a SYSTEM system. Plenty of people have. And more will.

Why not you?

For more details, please contact Shirley Minett at SYSTEM Limited, HR House, 447 High Road, North Finchley London N12 0AZ. Telephone 01-349 2911. Telex 6932836, or fill in the coupon.

Please send me further information about the System Special introductory offer.

Name _____ Position _____
Company _____
Address _____
City _____

Perfectly matched to your needs

SYSTEM

SYSTEM ARCHITECTS

MICRO NEWS

Half height
floppies

TEKDATA Electronics, UK agent for Teac, will stock half height 5¼-inch floppy drives in production quantities from July. The two Teac products, FD-55E and FD-55F, give half and one Mbyte capacities respectively in half the space of standard floppies.

Intel modules

HARDWARE and software modules for Intel's System 86/330 are available off-the-shelf from the distribution division of MEDL to Lincoln. This system can take up to three loosely coupled intelligent boards and includes RAM and fast mass storage.

Magic order

IRISH computer and automation systems supplier Mctee International of Dublin has plumped for SPL's RTL2 for real time projects. The SPL micro development package based around the Magic language will be used exclusively for such software development, says managing director Mike Pierce.



NOYCE... SRC does not want to depend on a few sources of finance.

Multi-company co-ops
in bid to cut R&D costs

by Robert Parry

THE desire to cut massive research and development costs and valuable manpower resources is proving a potent force for bringing about collaboration between US electronics and computer firms.

Two multi-company ventures first proposed last year are now underway and look certain to produce results.

First off the mark is a research co-operative under the auspices of the US Semiconductor Industry Association.

First year funding for the project will be \$6 million, and it will start with 13 participating companies. The Semiconductor Research Co-operative is designed to provide contract support to US universities for long-term semiconductor research projects.

It will be a non-profit organisation and, once more companies are signed up, is expected to reach a \$25 million annual budget.

Manpower shortages and the growing cost of semiconductor R&D are the main motivations behind the venture, says Intel's

Robert Noyce, chairman of the SRC.

It is hoped that support of generic research will increase facilities for more students while eliminating duplication of R&D within industry.

Funding for SRC will come from participants according to their sales or production of semiconductors, Noyce says, adding that no one company will put up more than 10% of SRC's funds.

SRC does not want to be dependent on a few sources of finance only, Noyce explains. In return for putting up money, the companies will receive licences for any patents obtained by the research organisations.

Although SRC has been set up as an answer to the US semiconductor industry's foreign competition, particularly from Japan, its charter provides for membership by non-US companies.

But the terms of such membership, which demand that all other SRC members have equal rights to participate in similar co-operative programmes in the other countries, are thought unlikely to bring many takers.

Executive director of the cooperative is to be Larry Shuman, previously director of the US government's very high speed integrated circuit (VHSIC) programme. Companies taking part include large producers and the IBM, DEC, Honeywell, Motorola, Intel, National and Burroughs.

The topics the co-operative is looking at to develop a long range research strategy include packaging alternatives for VLSI lithographic systems; semiconductor materials; chip reliability and CAD techniques. In the short term it will be looking at error effects of IC defects and prospects for gallium arsenide technology.

While the SRC is getting a second venture, Control Data Microelectronics and Computer Technology Enterprise (MCE) has to establish its financial and organisational structure. The forces made up of representatives of the 15 companies which attended last month's meeting have been set up to formulate development proposals.

SOFTWARE FILE

US firms seek
British products
for takeover

NOT content with exporting its native software, the US is looking to the British market to find packages for European distribution, or for sale in the UK.

Differences in accounting and language between European countries and the US mean major amendments to software, often involving information which is difficult to obtain outside the country concerned. Some American companies such as The Office Manager (TOM) which provides software for Wang machines, tackle the problem by appointing distributors responsible for conversion of the US product and for the subsequent maintenance.

In recent months another trend has appeared: that of buying software companies outright to obtain exclusive rights to their products, and with the spin-off that they will continue to write software that the US parent can market in Europe.

The recent acquisition of CSA Microsystems of Gerrards Cross by software distributor Peachtree, now owned by Management Sciences America, is a prime example. CSA Microsystems' "Jowey" was a complete range of accounting packages written in CIS Cobol, which Peachtree wanted both to complement its own MBS systems and as an entry into a wider commercial market.

Although Peachtree denies that CSA Microsystems will now be writing software to order, managing director John Hales said that

he expected to have "some influence" over what is produced.

Acquiring American software, however, is only one side of the coin. In distribution rights also play a large part in making UK-produced software look attractive.

Problems in acquiring rights in the US do not exist over here, according to Patrick Shannon of Softmatics Corp, a software distributor based in Massachusetts which is shopping in the UK for IBM-compatible products, with an initial budget of £100,000.

"In the States it is almost impossible to get exclusive rights to anything, because of the differing laws in each state," he said. "The beauty of British software is that you can buy it outright."

California-based Ashton-Tate, a division of Software Plus, has a large budget of about £500,000 and a wider brief, covering any CP/M-based system that looks promising.

"We are looking for any kind of software that is unique and exportable," explained George Tate, president of Ashton-Tate. "The best overall software products are now coming from Japan, Germany and France, but the language problems are much greater."

According to Tate, the company is covering all its options by also looking for partners to assist in solving language problems, rather like the method adopted by TOM. He is also keeping his options open on the channels of contact.

Caxton's card index
gets HP Plus backing

CAXTON Software Publishing's second-born, an electronic card index system for microcomputers, may be the company's passport to international sales.

Launched in the US at the end of March, where, according to Caxton director Dave Tebbutt, it aroused considerable interest, Cardbox is to be listed by Hewlett-Packard under its HP Plus scheme. HP Plus is intended to encourage third-party software suppliers by including their products in a list of "referenced software", effectively putting a Hewlett-Packard "seal of approval" on the package, and giving the supplier the benefits of a sales force worldwide.

Written by Martin Kochanski of Business Simulations, a firm of management consultants, Cardbox is aimed at the non-computer user who needs to keep a card index of information such as contact names and addresses, press-cuttings, or product details, but doesn't need or want to know about programming. All commands are in English and abbreviations are given full explanations at the bottom of the screen.

"One of the main selling points is that it is universal, and it is possible to index items under any



KOCHANSKI... "Universality is a selling point."

selected heading," pointed out Kochanski. "You can also display and print information in lots of different ways."

Cardbox costs £155, keeping it in line with Caxton's policy of prices around the £200 mark, and runs on any microcomputer with a CP/M operating system.

According to Bill Yarrow, one of the three directors of Caxton, dozens of copies were sold on the Osborne 1 computer prior to the US launch, and Caxton is now talking to six OEMs and main distributors there.

Small-bank system

BANKING system specialist Arbat has introduced a low-cost microcomputer system for banks with less than 30 staff.

Costing from under £50,000, the system is based on Arbat's "£10 million" ICP award-winning ABS banking system, and handles a wide range of applications including general ledger, turnover, interest accruals, foreign exchange and loans and deposits.

Harris OS switch

A MAJOR change of operating system has been announced by the Information Systems International Division of super-minicomputer manufacturer Harris Corporation.

Based on the existing Vulcan operating systems, VOS will include enhancements such as additional support for Pascal, Fortran 77 and Cobol 74. Available free to current users without source code, it costs £2,000 with source code.

I. P. Sharp is intent on
winning over the DPM

AFTER years of skirmishing, it looks as if the hatchet may soon be buried by DP departments and APL suppliers, according to Fred Perkins, director of European operations for I.P. Sharp Associates.

Perkins claims that I.P. Sharp is now talking to the DPM, rather than the erstwhile end-user. The company is intent on breaking through development restrictions traditionally imposed by the DP department.

"Deep down a lot of DPMs only want to run a nice smooth operation by controlling the users, or preferably with no users at all," he commented.

APL is now being forced on them by situations such as the one that exists at a large pharmaceutical company with in-house ICL equipment. The DP department now also houses an IBM 4341 which is run exclusively by the users.

Part of the new ease in selling APL is because the majority of users never see any APL code and are probably unaware that it exists under the English language interface. I.P. Sharp now puts emphasis on solving problems, rather

than buying APL, stressing the flexibility of an APL-based system.

"The area of traditional Fortran/Cobol packages was very good when it first started, but the downfall came because they tried to be all things to all men. Customers would have to change their business and then might well go on to micros," explained Perkins.

"I.P. Sharp started off with very little in the way of packages, but started writing in APL to allow customers to change systems as they went along."

Many large clients of I.P. Sharp's time sharing service have now gone in-house, including Rank Xerox, Citibank, Amdahl and the Wellcome Foundation. Philips has also taken APL in-house in the first of several installations, in which APL users will be provided with a bridge into an IMS database.

Micro APL is another pie in which I.P. Sharp has a finger firmly planted, but Perkins does not altogether approve, commenting, "APL is very powerful, and not really something to be implemented on a 10 cent piece of hardware."



PERKINS... "Deep down a lot of DPMs want no users at all."

Telephone Rentals is...



...with
British Telecom
monopoly now
behind us,
ahead with
modems

10 years experience in data network design, using modems, line drivers and multiplexers is what Telephone Rentals has to offer.

That's right - we don't just rent modems.

Our business is to provide the right data network for your needs - large or small, national, local or in-house.

Design, installation and maintenance on rental, that's the scope of our service. TR service. With the customer very much in mind all the time.

There are data communications specialists at every regional office of Telephone Rentals so, because you now have freedom of choice in your supplier, contact the TR office nearest to you and

recruit this unique commercial and engineering support service based on 10 years dynamic growth in data communications.

Or simply contact Peter Stallibrass at the TR head office.

This 16-page brochure tells you more about TR Data Comms capability. It's yours for the asking.

NatSemi tops Sperry's
'quality chips' league

FOLLOWING hard on reports that US semiconductor components now rival Japanese parts for quality, National Semiconductor has been placed top of the league for supplying quality devices to computer manufacturer Sperry Univac.

Sperry, in the US, tests samples from each incoming lot and regularly evaluates its nine domestic US and international suppliers. Criteria for evaluation are electrical and mechanical defects in incoming devices and lot rejection rates.

"NatSemi was well ahead of our other suppliers in every area evaluated," says Sperry's US product integrity manager Duane Georges.

The quality of semiconductor components shows a general improvement average over all suppliers. Sperry's test records indicate a fall in electrical defect rates from 7,000 defective parts per million incoming units in 1978 (all suppliers combined) to 2,800 in 1981.

NatSemi's performance over the

same period showed a drop from 3,000 defective parts per million to 600.

Other large users of semiconductor components, memory chip predominating in volume terms, are seeing the same sort of improvement in device quality. For example Control Data reported acceptance currently running at 99% for its major suppliers.

But there is still a perceived difference between Japanese and US quality in the minds of the buying public, and the US semiconductor manufacturers - who regard the quality gap as a thing of the past - are struggling to correct public opinion.

They lag behind the Japanese manufacturers in co-operation between buyers and suppliers. The industry is unable to match the feedback achieved by the vendor-integrated Japanese competition.

As if to confirm NatSemi's improving quality performance, the company's plants in Santa Clara and Tucson have been re-certified by the US Defence Department and it is due back on the military qualified parts list this month.

Apple Pi for industry

FOR those wanting to use the familiar Apple II personal computer in harsh industrial research and factory environments, a repackaged version is available from Newbury-based MC Computers.

Called Apple Pi, the system is made up of a repackaged Apple and floppy disc unit in a sealed metal enclosure to keep the machine out of the way of dirt, electrical noise and vibration.

User-definable push buttons are provided on the standard version

of Apple Pi which can restrict operator intervention in the running of the machine to a degree pre-programmed by the user. The computer and disc unit, with an automatic boot-in facility, are kept out of harm's way.

Advantages claimed by MC Computers for the machine include the ability to develop applications on a normal Apple II in the laboratory, then transfer them directly to the machine in the process room or on the shop floor.

Ford sets up IC centre

US CAR giant Ford Motor Company has set up a subsidiary to design integrated circuits for the company's aerospace and automotive products, Ford Microelectronics will begin design work towards the end of this year, with a design staff of between 70 and 100.

A projected high demand for computer and general electronics ICs, rather than the low volume products needed for Ford's automotive and other applications, lies behind the company's move.

It does not want to get left short of supplies at a time when IC designers and support personnel are

in demand if a general support materialises.

Ford currently uses many standard ICs and custom chips designed by outside semiconductor manufacturers. The need for the custom chips is growing. This, along with greater availability of "silicon foundry" services (manufacturing chips from customers' designs), is driving Ford's move into semiconductor design. Such as Motorola, United Technologies and National Semiconductor, and developments of computer-aided design (CAD) tools, make it possible for Ford to set up design centres in the US.

Britain's largest Company dedicated solely to Business Communications

Telephone Rentals plc
Head office: TR House, Blechley, Milton Keynes MK3 5JL
Tel: 0908 71200 Telex: 825107
Facsimile: Milton Keynes (0908) 70390

TR Offices at: Birmingham, Bristol, Exeter, London, Leeds, Liverpool, Manchester, Newcastle, Nottingham, Oxford, Plymouth, Reading, Southampton, Swansea, Telford, Walsley, Wolverhampton.

See our great range of terminals at the
World Trade Centre, London May 17th/18th.

☐ I WOULD LIKE TO ATTEND THE DEMONSTRATION.

☐ I AM SORRY I CANNOT ATTEND BUT PLEASE SEND ME FURTHER DETAILS.

To: Barbara Pearson, ITT Business Systems, Lion Buildings,
Crowhurst Road, Hollingbury, Brighton, Sussex BN1 8AN.

Name _____

Title _____

Company _____

Address _____

Telephone _____

ITT Business Systems

ITT Business Systems is the business communications arm of International Telephone and Telegraph.

COMPANY NEWS - 1

On June 17 Computer Weekly and Barclays Bank are holding a financing conference aimed at helping those seeking finance for the first time. This is the first of a series of

UK start-up challenges office automation giants

"GETTING it together is getting it right - right backing, right organisation and most of all the right products," says Scribe Computer managing director Phil Collins.

Last December, Collins and fellow director Rayno Shroff faced farewell to the safety of a regular monthly salary, the comforts and support of the big company organisation and went out on their own to found Scribe Computer.

The opportunity Collins saw lay partly in the proliferation of computer and word processing systems in the office, and partly in the way those systems were being presented to potential users.

"To launch a piece of hardware into competition with the likes of IBM and Xerox, you've got to be very foolhardy or you've got to get closer to the user requirement - which is for a tool to do a job, not a piece of plastic-bound electronics draped in fancy buzz-words," says Collins.

Both directors had direct personal experience of the office automation industry at a senior level. Collins in Software Sciences and Shroff at IBM. Collins says that this was an enormous help when it

articles detailing the experiences of companies which have recently started operations in the UK.

came to looking for start-up finance.

Although Collins had been involved in previous financings, his first phone call to his own bank manager at Lloyds Bank in Kensington High Street did the trick.

"The manager invited us in, studied our business plan, which we had kept fairly brief, and within a week had recommended us for the full £75,000 government guaranteed loan scheme."

Collins concedes that the scheme is expensive - the loan is at bank rate plus a 3% surcharge to the government - but says that it is worth the expense not to have to put up guarantees on homes.

But the most interesting thing about Scribe is that all the technology is British: it includes a basic 8-bit micro, followed by a 16-bit machine complete with all the necessary interfaces to connect the Scribe equipment to other office devices, including mainframes.

Collins says that when he and Shroff worked out the strategy for Scribe they had to start with the most advanced office automation announcements then current. This meant they had to offer an inte-

grated system, complete with Prestel interfacing colour graphics and framestore.

Anything else would simply have left them in the same position as so many other vendors, offering a fundamentally standalone kit.

"There was no way we could start like that, we'd have been out of the race before we even got into it," Shroff says.

"Having designed the workstation and specified the interconnecting devices we needed, we were able to find all the electronic hardware required in the UK, at a price which was fully competitive



Shroff (left) and Collins, showing how British finance and British technology can get together.

with anything we could get abroad."

Collins goes on to point out that this approach gave them a very high level of control over their production line, as well as flexibility in reacting to changes in technology and to the marketplace.

"Had we adopted the conventional OEM or distributor approach, using another company's equipment, we would have been trapped by advancing technology," he says. "The way we're approaching it, we have got our own technology into our product, from suppliers who are not an hour away by car, not on the other side of the planet."

"By the third quarter of this year we will be introducing an office network based on our exclusive programmable rings, and in the necessary switching equipment to connect up the Scribe workstations to other information processors in the office."

Scribe has already been out marketing its basic configuration, and Collins describes the response as very promising.

When a computer 'goes down' the last thing you want is a lengthy delay waiting for repairs. It simply wastes time and money.

With Digital's DECservice you won't believe how quickly we can get to you. As the world's No. 1 in minicomputers with a 16,000-strong service team throughout the world, nobody's better equipped to handle your problems with such speed, wherever you are.

For the majority of the UK and Eire we can have a service engineer on site within 4 hours (outlying areas within

either 8 hours or 24 hours, depending upon location).

Once on site, repair efforts will continue uninterrupted until your system is fully operational. Even if your system only consists of a Digital computer with a different make of peripherals.

And to make the fastest service even faster, our engineers to begin to analyse the computer problem instantly by remote diagnosis.

But you get more than just speed with DECservice. Digital engineers make regular preventative maintenance visits and will

COMPANY NEWS - 2

Management buys control of ex-Telex services company

A MANAGEMENT buy-out has given the employees and senior staff of Felling-based General Computer Systems UK (GCS) a controlling stake in their own company.

GCS, a former subsidiary of Telex Corp, provides a range of computer peripheral, software and maintenance engineering services. The company currently has a turnover of about £4 million, which managing director Nick Swallow reckons will soon reach £5 million.

Swallow, who has been running the company for the past ten years, and who led the bid to make GCS an independent UK company, says that the deal was no walkover for the existing management.

The whole operation took a total of 15 months to secure, and there were three other bidders to the parent corporation. Swallow says that the first attempt at a buy-out was wrecked by exchange rate fluctuations.

A price agreed with Telex fell with the pound, by 30%, which meant that the cost to the UK management soared by 30%. Having overcome that hiccup, it took another seven months of amicable negotiations before a final price of \$1,050,000 was agreed.

The first instalment, \$684,500 has now been paid to Telex, and the balance is due over the next two years. To raise the money Swallow and the management paid £70,000 for 51% of the share capi-

tal, with a Scottish finance company called Scottish Allied Investors buying the remaining 49% at a cost of £67,000.

Swallow says that he and the management team had run the company for so long, with an unusually high degree of independence, that the feeling for "UDI" became very strong.

"GCS was never put up for sale by Telex. We made the first approach."

Swallow also observes that there was a situation in which some outside body with which he and his managers might not have got along, could have made an offer

which Telex could not have refused.

"In that situation we and the employees could have been left out in the cold. We had always been self-financing, so the problem of cutting off from the parental pursestrings didn't arise either. And getting the money wasn't difficult."

Swallow says that fundamentally they were turned down by nobody. But there was a real problem in finding the right partners. "We didn't want someone who would just stick the money in and maybe attend a board meeting once a month. We wanted a financial partner who would help the company even to the point of participating in management meetings."



SWALLOW... problem in finding the right partners.

Although GCS will retain exclusive agencies to handle Telex equipment, Swallow said that the new relationship with Telex would allow the company to expand geographically, particularly into Europe.

Swallow observed that for any but the smallest companies the UK marketplace was too small. "It would cost a fortune to start from scratch," he says, "but we are already set up with 120 engineers and we have signed up our first deals in Scandinavia."

Swallow hopes to expand the company's computer business, particularly in the area of protocol converters, and into vertical markets. He says there is no point in going into markets where everyone else is fighting for market share.

GCS will be run as three separate profit centres, and in tandem with his earlier comment Swallow noted that the industry as a whole is not making enough money to finance itself.

GCS is not in that unfortunate position, and it Swallow reaches his ambition this year a further 20 or 30 people could be joining the workforce.

Swallow hopes to expand the company's computer business, particularly in the area of protocol converters, and into vertical markets. He says there is no point in going into markets where everyone else is fighting for market share.

Sudden spurt doubles Lundy profits

WITH a sudden upswing OCR specialist Lundy Electronics and Systems, parent of UK-based Lundy Farrington, has announced a \$1.4 million growth in sales for the first quarter of the year.

Bill Stout, company chairman, who was at Harrow Fair with his company, said sales for the first quarter were \$7.1 million compared with \$5.7 million in the same quarter last year.

Profits more than doubled from \$157,000 to \$355,000. Sales for the nine months to March 31 were \$19.6 million, compared with \$17.6 million for the same period last year.

The company, one of the biggest suppliers of cheque reading equipment to National Giro in the UK, and of coupon reading equipment to Littlewoods, is experiencing something of a corporate revival.

OCR has for long been one of the Cinderellas of the industry, frequently predicted for glory as the best and fastest means of getting data into computer systems, but somehow never making it to the input ball.

Lundy, which bought the assets of the old Harrington Corporation in the early Seventies and added the Harrington page and tally roll readers to its product lines, never caught the market's imagination the way many had predicted.

However, last year the UK subsidiary of Lundy secured a record number of orders from organisations as diverse as Britannic Insurance and the Yorkshire Water Authority, as well as new orders from Giro.

The sudden revival of interest in OCR, which has continued with fresh orders from banks Hill Samuel, the Ford Motor Company and the Electricity Supply Board in Dublin confirms Stout's confidence that improvement in the third quarter will continue for the rest of the year.

If the trend continues at its current pace Lundy could exceed \$30 million sales by next year.

Joe Henson, who took over as president of Prime last year, is optimistic about the remainder of the year. He says the company has demonstrated an ability to generate new business.

Cipher Data Products of San Diego, which last year acquired the memory product division of Perkin-Elmer, converted a loss of \$213,000 at the three-quarter end last year, to a profit of \$1.3 million this year.

Sales for the company's third quarter just ended were \$17.2 million, a 300% gain on the same quarter of 1981.

Tandem, maker of the Non-Stop computer system, has experienced a massive rise in sales for the quarter, from \$47.4 million in the first quarter of 1981, to \$85.5 million for the first quarter of 1982.

The six-month period, which ended for the company on March 31, 1982 showed a similar gain of 82%, with sales rising from \$88 million to \$160.2 million.

This sales revenue gain has been fully paralleled by a similar gain in profit. Profits for the half-year were \$19.1 million compared with \$11.1 million for the first six months of 1981.

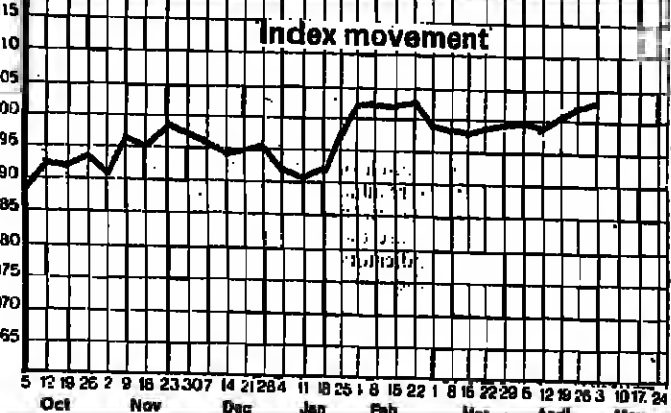
CW SHARES TABLE

Price 1982 Index 1982 Change +2.05

Price	1982	Index	1982	Change
High	Low	High	Low	
194	181	180	170	+10
154	141	140	130	+10
124	111	110	100	+10
94	81	80	70	+10
64	51	50	40	+10
34	21	20	10	+10
4	1	0	0	+10
...

The table shows the closing prices in London on Friday and in America on Thursday. The Share Index is based on the prices of the UK companies in the table. Highs and Lows have been adjusted where necessary.

*Shares traded on the Unlisted Securities market or under Rule 15(2)(a).



If you find an ad unacceptable, don't turn the page: turn to us.

The Advertising Standards Authority. If an advertisement is wrong, we're here to put it right. ASA Ltd, Brook House, Torrington Place, London WC1E 7HN.

You'll believe a man can fly.

Wall Street quarterlies strike a cheerful note

IN the last analysis, quarterly results tend to give too short-term a view of a company's performance, but in the US they are the norm and Wall Street has been rising with the quarterlies.

In the case of a small clutch of recent computer company results, the market ought to have risen nicely. It did not - there are too many other gloomy indicators about in the US - but the news augurs well for the industry.

Prime, in full recovery from the uncertainties of last year, has turned in first quarter sales of 21% up at \$103.2 million, compared with \$85 million for the same quarter last year.

Profits at \$10.6 million were 25% up on the \$8.5 million of 1981.

Joe Henson, who took over as president of Prime last year, is optimistic about the remainder of the year. He says the company has demonstrated an ability to generate new business.

Cipher Data Products of San Diego, which last year acquired the memory product division of Perkin-Elmer, converted a loss of \$213,000 at the three-quarter end last year, to a profit of \$1.3 million this year.

Sales for the company's third quarter just ended were \$17.2 million, a 300% gain on the same quarter of 1981.

Tandem, maker of the Non-Stop computer system, has experienced a massive rise in sales for the quarter, from \$47.4 million in the first quarter of 1981, to \$85.5 million for the first quarter of 1982.

The six-month period, which ended for the company on March 31, 1982 showed a similar gain of 82%, with sales rising from \$88 million to \$160.2 million.

This sales revenue gain has been fully paralleled by a similar gain in profit. Profits for the half-year were \$19.1 million compared with \$11.1 million for the first six months of 1981.

The Advertising Standards Authority. If an advertisement is wrong, we're here to put it right. ASA Ltd, Brook House, Torrington Place, London WC1E 7HN.



LEFT: the people controlling this train are 40 miles away.

RIGHT: Certainly the best train set I've seen - inside Kings Cross signalbox

The ops who keep track of 1,220 trains a day...

WHEN you were at school what did you want to be when you grew up? Not a computer operator, I'll bet. If you are male, chances are you wanted to drive a massive, clanking, steaming machine. No, not an IBM water-cooled mainframe, a steam engine.

Just as steam engines, lovely though they be, have given way to sophisticated vehicles such as the electric High Speed Train being developed for the Euston to Glasgow run, old semaphore signals have been replaced by more up-to-date methods of regulating trains.

The Great Northern suburban network links Kings Cross and Moorgate in London to Peterbo-

rough and Cambridge, and has 35 stations. When built, there were 57 signal boxes to control the 80 or so route miles, involving more than 260 actual track miles as a result of having four or more parallel tracks, sidings and so on.

When the network was electrified, all 57 manual signal boxes were replaced by one computer-assisted box at Kings Cross, which became fully operational in 1977. The area covered runs from Kings Cross and Moorgate to Sandy in Bedfordshire on the East coast main line (the Edinburgh one), and Royston in Hertfordshire on the Cambridge branch, including the Hertford loop line.

The signalbox is housed in a three-storey building (on the right as you leave Kings Cross, immediately before the first tunnel) which also contains a telecommunications centre. In the control room, the movements of 1,220 trains are plotted each day, and during the evening rush hour 97 trains are monitored simultaneously on the 80-foot long horseshoe-shaped control panel.

Thirty-eight signalmen operate the signalbox on a three-shift system, setting points and signals on long stretches of track by pushing buttons on the diagrammatic plan of the railway. If the line is clear, the relevant points will be

set to the required position, and when all safety precautions are met, the signals will change to green to allow the train to proceed.

On many stretches of the line, each train follows the same route as the preceding one, and to avoid the signalman having to set up an identical route for each train, the

signals work automatically. As a train passes a signal, it changes to red, preventing the next train from following too closely.

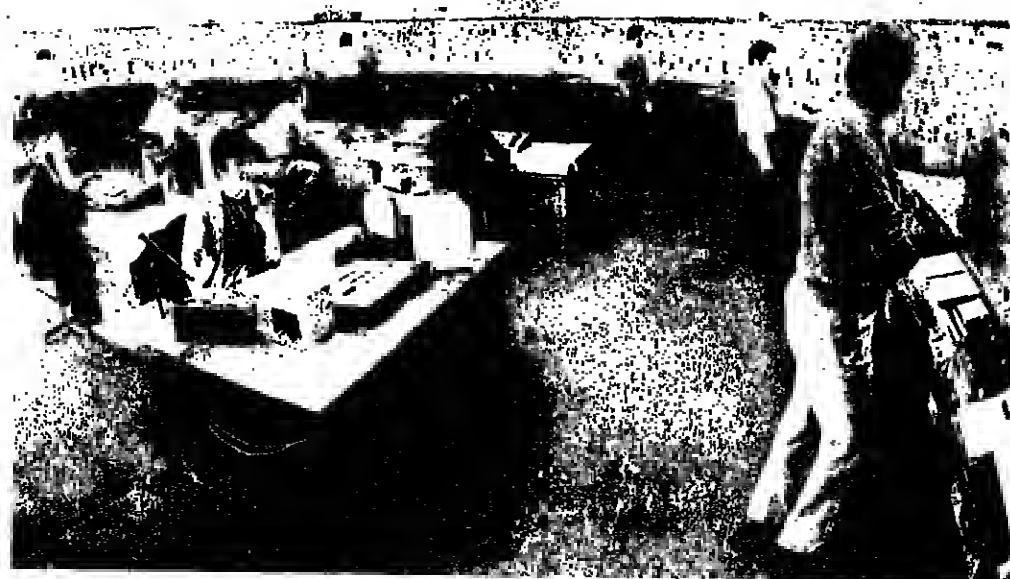
As the next signal down the line is passed, the first signal changes to amber, allowing the following train to pass with caution. When the third signal is reached, the first signal changes to double amber, and as the fourth signal is passed, the first one changes back to green.

Thus trains can run at 125 mph, under automatic control, separated by a total of four signals - well over the braking distance needed to stop an HST from its maximum speed.

In order that each train can be identified at a glance, they are depicted by coloured lights on the track plan. At strategic points on the diagram, displays show the identity of each train - the type of train (fast, slow, or goods), the route, and the train's number in the timetable.

The train identities are fed into the system at London before they leave, and Hewlett-Packard minis track the trains along the system as they move. Train identities are passed to the next signalbox down the line, at Peterborough, where a similar installation takes over the monitoring of traffic. The identities of London-bound trains are passed to the Kings Cross box from the Peterborough box in a similar manner.

by Andrew Thomas



set to the required position, and when all safety precautions are met, the signals will change to green to allow the train to proceed.

signals work automatically. As a train passes a signal, it changes to red, preventing the next train from following too closely.

As the next signal down the line is passed, the first signal changes to amber, allowing the following train to pass with caution. When the third signal is reached, the first signal changes to double amber, and as the fourth signal is passed, the first one changes back to green.

Thus trains can run at 125 mph, under automatic control, separated by a total of four signals - well over the braking distance needed to stop an HST from its maximum speed.

In order that each train can be identified at a glance, they are depicted by coloured lights on the track plan. At strategic points on the diagram, displays show the identity of each train - the type of train (fast, slow, or goods), the route, and the train's number in the timetable.

The train identities are fed into the system at London before they leave, and Hewlett-Packard minis track the trains along the system as they move. Train identities are passed to the next signalbox down the line, at Peterborough, where a similar installation takes over the monitoring of traffic. The identities of London-bound trains are passed to the Kings Cross box from the Peterborough box in a similar manner.

Another automatic feature of the installation is the signalling of trains in the Moorgate area. As a train approaches the station, it is automatically routed into a vacant platform. When a train is ready to leave, the station staff push a "train ready" button, and the system selects the correct route.

Should the Kings Cross box fail for any reason, there are emergency control panels along the track, each governing a smaller section of railway, which enable normal running to continue until such time as Kings Cross comes back online.

Other functions controlled from the Kings Cross box include station announcements, not just for the London terminus, but for any of the other stations on the network.

In addition, there are train destination indicators on most stations, which show the stations at which the next train will call, using information from the train identity code.

This type of signalbox, of which Kings Cross was the first to be commissioned, is being installed at various locations throughout the BR network, the latest to go being the new Clapham Junction box, controlling a large section of the Southern Region commuter network.

Next week, Op Spot goes underground.

PROGRAMMERS PAGE

Check Mate for Apple

THERE is now no shortage of chess programs for the well-known microcomputers. For example, a chess cassette for the Sinclair is priced at about £7.

At the opposite end of the price spectrum, a chess system has just been released for the Apple II for about £300 by London-based Database. Called Mate, this is a deluxe system with a real chess board and real pieces whose moves are communicated to the computer by means of magnetic sensors.

Indicated by LED lights on the appropriate squares of the board is Mate's reply, which is also displayed with the whole board on the computer's screen.

To launch Mate, Database issued an open challenge at the Earls Court Computer Fair. The score: 7-4 to the computer with two draws.

A spokesman for Database explains that the level used was the lower of two tournament levels which take into account the time taken. In other words one is never quite sure to what standard the computer is playing at any time - although that is also true of human opponents.

What I am waiting for is robot



At odds with Mate... Crispin Bates, 15.

chess. A Swedish company has a robot which it claims can play chess, although the contraption more resembles the travelling gantry crane which can be made with Meccano. As clumsy too - it contrives to knock the pieces around like skittles as its arm sinks ponderously on the board.

I conclude that we still have long to wait for a civilised game of chess across the coffee table with a robot. Meanwhile we must content ourselves with the likes of Mate, which at least saves the irksome burden of decoding the jargon of chess magazines (e4-e7! that sort of thing) before making a move.

Trespassers will be exploded!

AN alarming turn of events for burglars and prowling poltergeists has sprung from research in electronic warfare conducted by the Israeli government.

This threat to trespassers is a system which, when alerted, will telephone the proprietor of the premises, who can then talk back to the alarm to trigger suitable action.

A siren could be activated for example - or a canister of nerve

gas could even be exploded.

Any event capable of encoding into the telephone can be detected, so the system will serve as a fire alarm, or as a timely warning to fetch in the washing.

The system was designed by Ilan Haran, formerly of the Israeli government, and has already been implemented, in its jumbo form, in 500 branches of an Israeli bank.

The small form, consisting of a portable encoder, would be ideal

for a corner shop, Haran tells me.

The system will normally be used in its listening capacity with acoustic detectors linked up to telephones. "This relies on an algorithm which cuts out stray and repetitive noises," says Haran.

The larger version of the system is based on the Elvett Daisy computer, with a program to interpret the alarm signals as they come in from one of many branches, and in some cases to fix the response.

Shelling out too much for modems?

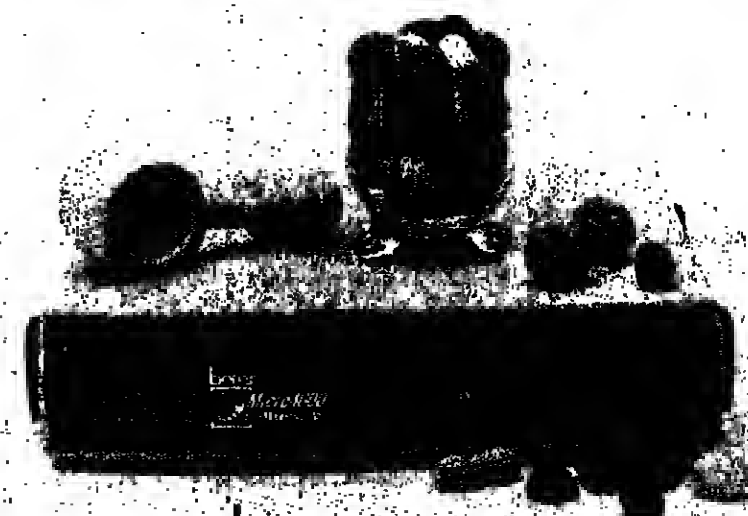
You may be spending more now on telephone lines than you ever have before, but if you're wise, you'll be spending less on modems. New low price standards have just been set by Microm-Borers new Micro4000s - thanks to smaller and more powerful single-board designs using higher level integration.

But "how" isn't important. What counts is that now you can have the industry's most reliable, best performing modems almost for

peanuts. (For example, our CCITT V.27-compatible Micro4027 "No-Frills" model, for 4800/2400 bps leased line operation with dial backup, is under £1000.)

Need another speed? There's a Microm-Borer modem or line driver for any speed up to 19,200 bps, at prices that will surprise you.

That's our story in a nutshell. Give us a ring, write, or come out to Reading and see them being made. You'll be glad you did.



MICROM-BORER MicroComputers for DataCommunications

MICROM-BORER LTD, 15 Grafton Road, Reading, Berkshire RG2 0JF. Tel: (0734) 86601

MICROM SYSTEMS, INC., 20151 Northchase Street, Chesham, Bucks HP8 4JL. U.S.A. Tel: (215) 989-8944

Please tell me more about the Micro4000s

Name _____ Position _____

Firm _____

Address _____

هاتنا مني لاص

New languages could make Ada obsolete says European survey

COBOL is here to stay - until our schoolchildren grow up. That is the stark finding of survey of the consultancy and software services market in Europe conducted by CMG Computer Management Group.

Packages will be the biggest growth area in the software industry, which will increasingly be relied upon by the computer manufacturers for window dressing application programs.

And there will be more collaboration between software houses with government encouragement for joint ventures, mergers and acquisitions to create large companies competitive in world markets.

The survey also finds that demand for packages will outstrip that for bespoke software, even in specific industries.

Here we must be clear that the line between bespoke and package is vague and blurry. Bespoke software will often include modules available as packages, and a system developed for one company on a bespoke basis might later be sold to others in a packaged form.

This is the case with British Petroleum, which markets software developed internally to other oil companies through its subsidiary Scicon. There will be more of this in the future, according to the survey, with bespoke development more confined to new, unforeseen applications.

The most contentious finding of the CMG survey concerns Ada, which it believes is not likely to become commonly used in the next five years. After that new languages will be developed which will render Ada obsolete, at least among the business community, as new ideas come in from the present generation of computer-crazed schoolchildren.

This interpretation of the survey is hotly disputed by leading Ada authority John Barnes of SPL, who finds this faith in our schoolchildren extraordinary.



BARNES... "Teachers are just passing on information on Basic from manuals," he says.

CMG survey concerns Ada, which it believes is not likely to become commonly used in the next five years. After that new languages will be developed which will render Ada obsolete, at least among the business community, as new ideas come in from the present generation of computer-crazed schoolchildren.

This interpretation of the survey is hotly disputed by leading Ada authority John Barnes of SPL, who finds this faith in our schoolchildren extraordinary.

One of the amounts is £3.16. Can you work out the other three? See page 55 for solution.

"They are being taught in junk anyway, so they will never have any impact at all," is his initial response on hearing the assertion.

"Teachers are just passing on information on Basic from manuals," he says.

Barnes goes on to say that a skeletal course in Basic is fine for arts pupils in order that they may have a flavour of computing. But children going into science should be taught maths and learn nothing directly about programming at first.

"Children are taught New Maths at school with set theory," he says. The set theory should be built on in computer science, using a language like Pascal.

Barnes thinks that the style of Ada may not directly appeal to business users, but he sees no reason why it should not take over in process control applications and in defence.

Indeed it is already doing so with CAP Reading, for example, doing research with robots controlled by programs written in Ada.

PUZZLER

I HAVE before me four three-digit cash register amounts that add up to £7.11. Strangely enough, when multiplied together they produce the same £7.11 total.

One of the amounts is £3.16. Can you work out the other three? See page 55 for solution.



FREE WITH CONTROL DATA DISK PACKS: ONE OF MY PLATO COURSES.

Order over £500 worth of disk packs from Control Dataset, and you gain two exclusive extras. First, the reassurance of the Control Data label. It's the symbol of technical excellence, backed by a unique guarantee.

Second, the chance to take a PLATO computer-based training course FREE OF CHARGE. You can enjoy a PLATO course at your nearest Control Data learning centre. It will be one of a range of individualised training courses taught by the PLATO learning system. For full details of this limited offer, ring Control Dataset on 0438-3322 and ask for PLATO.

CONTROL DATASET



ATLANTIC

- IBM Systems Leasing
- IBM Computer Brokerage
- IBM Systems Engineering Services

ATLANTIC ANNOUNCES INCREASED TURNOVER AND A SUBSTANTIAL IMPROVEMENT IN PROFITS FOR 1981

Consolidated Trading Results: 1.1.81 - 31.12.81

	1981	1980
TURNOVER	£16,165,000	£14,410,000
NETT PROFITS	£ 1,409,000	£ 919,000
NETT ASSETS	£ 4,984,000	£ 3,385,000

Considerable growth in customer base in both the UK and Germany - large numbers of small systems orders signed for 4300 Processors - £9m order backlog as at 31/12/81 - further expansion of UK facilities planned for 1982 to include a new branch in Coventry - many orders taken in both UK and Germany during the 4th quarter for IBM's new 3081 Multiprocessor - first lease contract signed in France for IBM 4341 System and peripherals - rapid expansion of both staff and facilities planned in Germany for 1982 - substantial profits increase due to improvement in Group's residual position and falling interest rates.

Extract from the report of the Chief Executive and Managing Director.

Atlantic's Annual Report and Accounts are available on application to the Company Secretary.

ATLANTIC Computer Leasing plc

Atlantic House, Red Lion Court, London EC4A 3EB. Tel: 01-583 9481. Telex: 268344

Branch Offices in Manchester, Amsterdam, Cologne and New York.

Nothing ventured....

HERE'S the solution to the latest batch of Adventure problems. Your response has once again been gratifying, indicating that this is a subject dear to your hearts - and which takes up a good deal of your time.

I'd be interested to know what attitude your site takes to game playing and writing - is it frowned upon, or allowed on the grounds that it can often spawn technical innovation and develop interest in programming techniques?

More hints

OTHER handy hints received this week include: After throwing the eggs at the troll, cross the bridge and pick up the spices, bear and chain. Use the bear to scare the troll on the way back, but don't take it across the bridge with you. (Steve Campbell)

The trident (no relation to cruise) is used to open the clam, revealing the pearl, and the way to obtain the Persian rug is to hit the dragon. (The Dwarf, following my remark about his parents two weeks ago, now informs me that dwarves don't have them, they simply appear in a cloud of greasy black smoke.)

Thanks also to everyone else who submitted solutions, not least The Giant from Salford, John Perry and Andy Kennedy who phoned in the answers. They pointed out that the magic words must be

ADVENTURE

spoken one at a time in order to have any effect.

It appears that there is yet another Adventure derivative in use (how many are there for heaven's sake?), written in PL/I and incorporating a lot more features, rejoicing in the name of Bilbo.

I wonder where they got the idea from?

Answers

SIR, It's your friendly dungeon master again, with the answer to the Adventure and Dungeon problems. Michael Slattery should give the golden eggs to the troll, then retrieve them by saying FEE FIE FOO FOO (dead easy really).

Rob Cottrill's problem is a lot harder. The egg is the only treasure hidden outside the cave, so naturally it must be taken inside the cave first. The thief must be allowed to steal it from you and take it back to his lair.

If you then manage to kill the thief, you will find that he has opened the egg using his superior knowledge. This is not the end of Rob's problems, as he will then face the endgame with 100 more points to find.

I wish him luck. It's pretty obvious. GROFF RICHARDS

The protection debate is given a wider context

The Politics of Secrecy, James Michael. Penguin Books, £2.50.

THIS book is about the attitude of successive British governments to information, its use and dissemination. It deals on one hand with the government's refusal to allow freedom of information, or access to government information, and with the lack of privacy or data protection legislation, on the other.

It gives a thorough and extensive coverage of the issues underlying the whole secrecy debate — the right to know — and is essential reading for anyone interested in this significant debate.

Its one deficiency is that it only devotes one chapter to data protection and computers. This gives a fairly thorough treatment to the Lindop Committee report on privacy, but does not mention subsequent work in this area, like the Council of Europe convention on data protection, of which the UK is one of the signatories.

It does discuss the Police National Computer, though even

this has been overshadowed by a Scottish research group's report on The Police Use of Computers, published at the end of March.

The debate about data protection has tended to be conducted in isolation and this book performs the useful function of putting the whole thing into the context of the much wider debate of open government.

Successive British governments have, it seems, a fatal addiction to refusing to disclose information about the safety aspects of British products, even when this information is publicly available in the United States, because of the US Freedom of Information Act.

The book amply covers the machinery through which the government maintains its monopoly of information; the layer upon layer of informal rules and Acts of Parliament, topped by the Official Secrets Act. Most alarming is the arbitrary and inconsistent way in which this Act has been applied.

From the discussion, it would

seem that any data protection legislation would have to be allied with a change in the Official Secrets Act, either concurrently or retrospectively, which itself would probably be tied to a move towards more open government.

Government must become more open — the wide-ranging, catch-all, Section 2 of the Official Secrets Act makes it almost impossible for information to become more restricted.

Much of the information in the book is already known, though this is the first time, to my knowledge, that it has been drawn together in this useful and comprehensive way.

What is perhaps surprising is that James Michael is an American lawyer, though he has been resident in the UK for about 10 years. He has worked for the American safety campaigner Ralph Nader and is currently a senior law lecturer at the Polytechnic of Central London.

Kevan Pearson

OS complexity forces compromise

Operating Systems Elements — a User Perspective. Peter Callinagert. Prentice-Hall, £17.95.

THE complexities of operating systems make them a difficult subject to write about. If an author wants to give practical and in-depth coverage to the subject, he will be tempted to concentrate on one manufacturer's approach and to look at that manufacturer's operating system evolutionary path.

The problem here is that only the large manufacturers such as IBM, ICL or Digital Equipment get coverage if the book is to find a large enough readership, although lesser-known operating systems may be more elegant.

If, on the other hand, the author

wants to remain independent from any single manufacturer, his quest for common ground may lead him away from in-depth coverage and to a compromise coverage of the lowest common denominator in operating systems.

Operating Systems Elements falls in the latter camp. The book is written primarily for third- and fourth-year undergraduate students. The readers are assumed to have some experience in assembly language programming and to be capable of reading short programs in an Algol-like notation.

It is intended for people studying the control programs of an operating system, of whom relatively few will ultimately design and implement an operating system. Only a somewhat larger

number will modify a control program, but virtually all will use the facilities provided by operating systems, says the author.

"The book makes a single pass over operating systems, at a level intended to be neither trivial nor deep. Principles take priority over engineering details, and complete implementations are not discussed. A few algorithms are expressed in a bastard Pascal, PL/I, or Algol program," the preface reads.

Callinagert attempts to use terminology which he believes will not be misleading while at the same time being universally acceptable.

Boris Sedacca

Buyer's guide leaves out Sinclair

The Home Computer Handbook. Frank Harbert with Max Barnard. Victor Gollancz Ltd. Price £7.95.

IT is doubtful whether this book is of much value. It contains many assertions on the merits of computer professionals on such matters as artificial intelligence and many other areas which

demonstrate that the author's knowledge of the subject is at best superficial.

It is also unlikely that many people, without access to a computer, will learn programming from a book using an artificial language. It is about as likely as someone who has never seen a piano and has no access to one, learning to play

from a poorly written book.

The book claims to contain a buyer's guide to personal computers but does not mention Sinclair. It would seem to have got it all wrong.

Philip Rule

Chairman of software house S&S Computing.

Mail service planner contains some pearls

Planning for Electronic Mail. Compiled and edited by Alan Simpson. Gower Publishing Company. Price £9.50.

READING this book will give a strange sensation of déjà vu to anyone who has read Planning for the Electronic Office, the first of the Office of the Future series. Although the contributing authors are different, much of the text seems the same and a spurious section on the history of word processing has even been allowed to sneak in, under the justification that it is "a likely contender for generating the mail".

There are, however, several pearls among the articles, which would be of practical value to someone preparing the ground for setting up an electronic mail service. Fred Perkins of I. P. Sharp Associates claims that an electronic mail system has been in use as part of the company's worldwide time sharing service for the last ten years, and his detailed knowledge of the subject seems to bear him out.

Detailed advice on the planning side is given in the first chapter by

Alan Thompson of ICFC Consultants, with yardsticks to help evaluate the benefits of introducing this type of system. He suggests that the entire cycle of mail processing, and therefore current deadlines, within the office environment would be altered by electronic mail; something which many users might only discover the hard way.

An optimistic section on the future of Prestel, by Graham McMorris, was presumably written before British Telecom announced 90% price cuts in its operation to get the system more widely used. His cheerful catalogue of the improvements scheduled for Prestel left me with sinking feelings: does this mean that British Telecom's charges will have to rise yet again to pay for all this?

The advantages and disadvantages of facsimile machines are another area simply covered within the book, and A. St.F. X. Gervel of ITT Business Systems gives a useful cost comparison chart between fax and telex services.

Maggie McLening

Basic principles of microprogramming

Elements of Microprogramming. D. K. Banerji and J. Raymond. Prentice-Hall, 1982. £18.75.

INTENDED to provide a comprehensive coverage of basic principles, practices and applications of microprogramming, this book adequately fulfils its aim. It derives from a course on microprogramming and machine architecture but should be of interest to a far wider audience, although as the authors rightly point out microprogramming should not be confused with the programming of microprocessors.

Readers are assumed to have a background knowledge of machine organisation and assembly language programming. With this base the first of the five parts of the book covers basic, historical evolution and essential computer organisation in three chapters, thus providing a valuable introduction to the field and a sound foundation for the book as a whole.

The second part of the text discusses microprogramming hardware and microinstructions in a detailed but readable way and includes design considerations.

Part Three devotes its three chapters to microprogramming practice, covering the development of microprograms, implementation of instructions and functions, and performance and optimisation.

Microprogramming applications are featured in part four and applications in emulation, operating systems and high-level languages are well catered for.

The final part discusses examples including microprogrammable microprocessors and, interestingly, top-down structured programming at machine level.

Tony Powell

Head of Computing and Mathematical Sciences, Wolverhampton Polytechnic.

When you've spent years developing mini-computer operating systems for the competition, know their hardware inside out, completely understand their limitations and finer points, then you can make a more efficient and less expensive minicomputer.



POINT 4
DATA CORPORATION

We've made it.

At POINT 4, we probably understand the mini-computer market better than most. Developing software for our competitors gave us an invaluable insight into the way throughput could be improved, memory and communication could be extended and operation and maintenance simplified.

In addition, we looked for a reduction in the number of components and sub-assemblies and consequently, a major reduction in price.

At an entry point of around £12,000 and up to double the speed of comparable minicomputers, the remarkable POINT 4, with its Programmable

- ☐ Flexible configuration — more than 100 possible disc drive/controller combinations
- ☐ Instruction execution, including access, in 0.4 microseconds
- ☐ Up to 32 Mb of accessible memory
- ☐ Up to 1200 Mb of disc storage
- ☐ Up to 128 I/O ports
- ☐ Up to 32 interactive terminals
- ☐ CPU and RAM on one board
- ☐ DMA Multiplexer
- ☐ Compatible with Data General Corp. Instruction Set
- ☐ Extended Instruction Set via Programmable Control Store
- ☐ Built-in CPU/Memory diagnostics
- ☐ Memory parity error detection
- ☐ Battery back-up
- ☐ "Jumper Saver" logic
- ☐ Front loading chassis. No slides required
- ☐ Separate power supply chassis
- ☐ Cache Memory
- ☐ Remote or attached operator control unit (optional).

Sequential Control Logic, represents standards of efficiency and value for money we believe you'll find extremely hard to beat.

Microprogramming techniques and a programmable control store permits the emulation of various instruction sets, and a high speed inter-bus operates at 4 megabytes per second. Flexibility of configuration allows a wide range of peripheral devices not limited to a single range. A virtual control panel and built-in diagnostics makes the POINT 4 probably the easiest computer on the market to operate and maintain. Yet, the computer, memory and all options are implemented on a single printed circuit board.

The POINT 4 is also available with a wide range of software products. The multi-tasking, time sharing systems, IRIS and BLIS, support simultaneous system use for data entry and retrieval, as well as programme preparation debugging and execution. The system is designed for maximum flexibility in configuring system peripherals and supports ASSEMBLER, COBOL and BASIC Languages, a variety of utilities and an automatic programming system.

Ultimately, the POINT 4 is minicomputer of consequence no buyer can afford to overlook.

Find out more. Contact the sole UK distributors—

TKT Computer Services Ltd.
Essex Hall, Essex Street,
London WC2R 3JD.
Tel: 01-836 9261.
Telex: 27496 LINGLON.

TKT
COMPUTER SERVICES



We're rich in the key resource for successful software development.

People. The right people. That's the first need for an international services company. And that's why more and more computer software development is locating in Ireland.

Because Ireland is a country where over 50% of the population is under 25. Young people who have grown up with an educational system tailored to equip them for this technological age. Each year sees a further upsurge in the resources devoted to higher education in technical areas. Fields like engineering and computer science.

Today, Ireland provides a workforce potential unequalled anywhere in Europe or the US.

But Ireland is more than a rich source of skilled staff. In Ireland you will find an attractive incentive package specially designed to meet the needs of international services companies; companies where personnel is the key factor.

There are 100% training grants to new companies and generous employment grants. And these are just two of the cash grant programmes available. In addition, you'll find that Ireland has the lowest corporate tax structure in Europe.

And, in an age where employees rightly expect their job to permit an attractive lifestyle, as well as a good salary, Ireland offers a working environment that is second to none. In Ireland we have found that it is possible to keep pace with this technological age without sacrificing the good things in our values and way of life.

Find out more about Ireland. Contact the nearest office of IDA Ireland for further details. We'll be glad to help.

REPUBLIC OF IRELAND
The intelligent location
in Europe for international services

IDA Ireland
INDUSTRIAL DEVELOPMENT AUTHORITY

The Irish government's industrial development agency has offices in London, 115 Old Devon St, London W1V 7LB. Telephone David O'Donovan at 01-828 5941. Offices also in Dublin, Amsterdam, Paris, Cologne, Stuttgart, Milan, Copenhagen, Madrid, New York, Chicago, Los Angeles, Houston, Cleveland, San Francisco, Boston, Fort Lauderdale, Sydney and Tokyo.

Industry training board names head

THE Engineering Industry Training Board, responsible for training in the computer manufacturing industry, has appointed Ronald Stevenson as director to replace Joe Monn. Monn retired last year because of ill-health. Stevenson has been on the board since 1965, and head of corporate planning since 1976. He is a chartered engineer and a Fellow of the Institute of Mechanical Engineers. Operating costs of the board, previously met by the government, are now being paid by engineering employers. The employers are now insisting that the next chairman should come from the employers' side. The term of appointment of current chairman Lord Seaton, who has also been acting as chief executive, expires this July.

DP squash tournament

SQUASH fans are being given an opportunity to show off their skills and win a share of the £1,000 prize money offered by Carter-Parratt in the 1983 Wright Line Squash Tournament. The winning company will also be presented with a £500 voucher for the computer documentation filing system Docu-Mate from the Wright Line range. Entry is limited to 512 teams, and early rounds will be drawn on a regional basis to minimise travelling. One team per company per location will be accepted. Rounds will be played throughout the year culminating in the semi-finals and finals at the Lamb's Club in London on December 3 and 4, 1983. First round starts in January, but Carter-Parratt advises competitors to apply as soon as possible. Entry forms and details from 1983 Wright Line Squash Tournament, SP&M Ltd, Penthouse Suite, Turf Building, Great West Road, Brentford, Middx.



Dick Rayner (left) and Ken Watanabe have been named joint managing directors of Casio Electronics. Rayner, who has been with the company since its formation in the UK in 1975, controls sales, marketing and general management across all product groups. He started as sales manager. Watanabe joined Casio about a year ago as director of co-ordination and planning. His new responsibilities lie in finance, and production.

Four new directors at SPH

FOLLOWING the reorganisation at SPH, Systems Programming Holding, the holding company, has made four new board appointments from Western Broadcasting Company, holder of 60% of SPH. They are Frank A. Griffiths, chairman of Western Broadcasting, Frank W. Griffiths, Ray Peters and David Owen, all directors of Western Broadcasting. Acting chairman is Robin Bell, who is chairman of Standard Industrial Trust. Managing director is Peter Adams, former chairman and MD who remains chairman and managing director of SPH. David Rodney becomes director responsible for UK operations and Michael Wake continues as secretary and financial director. The British Technology Group, which owns a 40% interest in SPH, has not yet nominated its representatives to the board.

■ Diane Williams has been appointed UK sales manager for Tempo response time monitor at PME. She was previously with Rank Xerox.

■ Michael Coffee has been appointed director, industry marketing at Modcomp. He was previously business manager, power/process control.

■ George Pitcher has joined Oceanic as manager of the commercial system division. He was previously managing director for a micro marketing organisation.

■ Fred Klerks and Mike Laacy have joined Eosys as senior consultants to work on the CCTA telecommunications strategy study and the DoI/British Telecom Joint Research Programme. Klerks was previously with Citibank and Laacy was previously with CAP.

■ Chris Scottford is sales manager at Micro Peripherals' European subsidiary MPF-Europe, based in Berkshire. He was formerly a sales executive with Perlec. Alan King, previously Perlec's service manager, becomes technical support manager for the company.

■ Ted Barker and Rodney Dew have been appointed to the board of ICFE Consultants. They are both managing consultants.

■ Hugh Morris has joined Kennedy as sales engineer. He has been with the company since 1979 as service and training manager.

■ Ken Trueman has been appointed director at RTZ Computer Services. He joined the company five years ago as salesman for the Fascia system, becoming product manager, then sales manager for Fascia and GL Plus. He was previously with Baric and ACT.

Finance is our Business

Lombard believe in people doing what they do best. We realise that controlling increasingly tighter budgets is becoming an ever more demanding and exacting science. Accurate forecasting together with the need to release valuable capital requires the right choice of funding options. Finance and leasing are what we are best at.



Head Office Lombard House, Curzon Street, London W1A 1EU
A member of the National Westminster Bank Group

If you'd like to know more about the possibilities of leasing equipment, plant, vehicles, or about the options available, call in at your local Lombard Branch Office or ring 01-409 3434, and ask for the Leasing Manager.

■ Dr Douglas McGregor, formerly reader in the department of computer science at the University of Strathclyde, has been appointed personal professor at the department. Dr Andrew McGeddie, a lecturer at the university, has been appointed reader.

■ Fred Klerks and Mike Laacy have joined Eosys as senior consultants to work on the CCTA telecommunications strategy study and the DoI/British Telecom Joint Research Programme. Klerks was previously with Citibank and Laacy was previously with CAP.

■ Chris Scottford is sales manager at Micro Peripherals' European subsidiary MPF-Europe, based in Berkshire. He was formerly a sales executive with Perlec. Alan King, previously Perlec's service manager, becomes technical support manager for the company.

■ Ted Barker and Rodney Dew have been appointed to the board of ICFE Consultants. They are both managing consultants.

■ Hugh Morris has joined Kennedy as sales engineer. He has been with the company since 1979 as service and training manager.

■ Ken Trueman has been appointed director at RTZ Computer Services. He joined the company five years ago as salesman for the Fascia system, becoming product manager, then sales manager for Fascia and GL Plus. He was previously with Baric and ACT.

DIARY

MAY 17 Recent developments in cryptography by Dr Donald Davies of the National Physiol Laboratory. BCS Technology of Software Protection Group. BCS Headquarters, Mansfield Street, London. 6.30. Details Simon Elsom (021) 3599 3661 ext 735.

MAY 19 Ron Adam from British Telecom on the first year's experience running SwitchStream 1 packet switched service. BCS Data Comm. Specialist Group. BCS Headquarters. 6.00. Details Peter Radford on 01-636 5440 ext 205.

MAY 20 AGM and computer archive films. BCS Coventry branch. Physics Lecture Theatre, University of Warwick, Gibbet Hill Road, Coventry. 7.30.

AGM, BCS South Essex branch. Access Sports and Social Centre, Eastern Avenue, Southend-on-Sea. 7.45.

AGM followed by 1982 - Information Technology Year by D Finnberg, deputy president, BCS.

MAY 21 Teaching programming languages for microprocessors. IEE, IEE, Savoy Place, London. Details from IEE on 01-240 1871 2.00.

MAY 24 More design oo micros. IEE, IEE, Savoy place, London. Details from IEE on 01-240 1871 2.00.

The computer, which has infiltrated most aspects of a company's operations, is being increasingly pushed forward as a universal planning tool. The problem for managing directors and even company accountants is that without the time or even the knowledge to examine every system on the market, which computer route should they take?

As Roy Sutcliffe, a director of EPS Consultants which supplies computer-based planning systems, says: "Most of the companies we talk to are convinced of the idea of using some kind of computer system to help them plan. The questions in their minds now are what they should use and how they should use it."

Both these questions can pose serious problems, particularly for the company which has little experience of the computer industry. The choice of systems on the market range from a £200 software package to run on a microcomputer to a £20,000 package for a mainframe. The selection process does not end there, however.

THE Third International Conference and Exhibition on Engineering Software will focus on the use and application of computers in engineering. Organized by the Computational Mechanics Centre, it will be held from April 11-13 next year at Imperial College, London. The conference aims to provide a forum for the exchange of recent advances and discussion of recent advances in the software engineering field. The exhibition will cover all products, services and equipment related to the conference. The organisers have issued a call for papers. Details from conference secretary, Computational Mechanics Centre, 125 High Street, Southampton SO1 0AA.

THE Yankee Group is aiming to assess and analyse the Japanese high technology industries in its Focus: Japan conference to be held on May 24 and 25 at the Sheraton Hotel in Brussels. The semiconductor, telecommunications and information processing industries will be examined to determine their future role and impact on user and vendor industries. The conference will look at Japan's strengths and weaknesses and the market potential for Western companies in the Japanese marketplace. Fee is £295. Further information from Pat Jackson, The Yankee Group, Regal House, Lower Road, Chorleywood, Rickmansworth, Herts. WD3 5LQ. Tel Chorleywood 4119.

BCS Leeds and District branch. Parkway Hotel, Leeds. 6.30. AGM and Presidential visit. BCS Central London branch. BCS headquarters, Mansfield Street, London.

AGM followed by Micro applications, by Rex Ingram of Leasco. BCS South Yorks Branch. Applied Science Block, University of Sheffield. 7.20.

AGM followed by the Universe Project at Rutherford Appleton Laboratory. BCS West Herts branch. The Culpin Room, The Pavilion, Hemel Hempstead. 7.30.

BCS Leeds and District branch. Parkway Hotel, Leeds. 6.30. AGM and Presidential visit. BCS Central London branch. BCS headquarters, Mansfield Street, London.

AGM followed by Micro applications, by Rex Ingram of Leasco. BCS South Yorks Branch. Applied Science Block, University of Sheffield. 7.20.

AGM followed by the Universe Project at Rutherford Appleton Laboratory. BCS West Herts branch. The Culpin Room, The Pavilion, Hemel Hempstead. 7.30.

SOFTWARE MONTH

Financial and project planning

IN the welter of off-beat applications now coming on to the market, it is easy to overlook the basics. Yet financial software - accounting, general ledgers and the like - still accounts for a huge part of software revenue and spending, in a market which is becoming fiercely competitive.

Software Month examines how far the industry has got in creating good, reliable financial software, and also looks at the other possibilities that open up - financial modelling, project planning and so on - once that valuable basic data is on record.

Financial and accounting needs are often behind a company's initial decision to buy a computer. In the early days of computing, the first applications were nearly always accounting and financial ones, taking over from long-established methods of bookkeeping by hand. Other uses for the computer came later.

Often it was a matter of commissioning a software house to write a tailor-made piece of software, a lengthy and expensive business.

The basics of accounting - what goes in and out, credit, debit, monies owing and overdue, outstanding bills and debts - are universal, although each company's method of operation can be vastly different.

It was this factor that led financial software to become the first target for software "packaging". Software vendors, at a time when software was emerging as big business, realised that they could cater for much larger markets with less effort and investment by producing a general-purpose "package", which would cater for the everyday needs of a firm, although usually with some tailoring.

Many accountants were absorbed into the computing business this way. Companies like CAP, now huge and diverse in its software interests, were founded by accountants who

realised early the huge market for high-quality reliable financial applications.

But that didn't mean that financial applications were perfected. Far from it. A blend of programming and accounting skills was needed, but that wasn't enough.

Problems came when outside factors changed. Even a company with a smooth-running system could find that changes in the law, tax regulations, accountancy practices and so on could lead to lengthy and expensive maintenance and updating of their systems - witness the flood of packages offering current-cost accounting recently when the SSAP 16 accountancy rule came into force.

Users' views of computerised planning	19
Software on artificial intelligence	21
Round Up	21
Mainframe suppliers into accounting packages	22
Cowboys selling microcomputer	23
Upgrading your system	23

This is still the main problem facing financial software manufacturers. It has to be supported as well as being reliable in the first place, since once a company has abandoned its book-keeping by hand in favour of machine-held data, it is at the mercy of the computer and its software.

The same pattern is holding true in the microcomputer world, which has expanded the marketplace for software, and in particular financial software. Companies like PPL, MSA and its recently purchased micro arm, Peachtree, already flourish on the strength of

financial applications, and many smaller companies, such as Compact Accounting, are following suit.

Support and maintenance are still key issues, which is why bureau services like RTZ Computer Services, RHM, and many others, keep in the running. Often those who urge that their product is more expensive because it is well supported will win over the cheap solutions, simply because a firm's data on its transactions is its lifeblood, and not many people are willing to invest in a computer without taking a long hard look at the quality of software to go with it.

With the microcomputer's emergence as an increasingly competent business tool, a race has begun to put certain well-established and proven applications on different machines. The pattern already set in the earlier eight-bit market of "approved suppliers" is being enthusiastically followed by the vendors of 16-bit "personal" computers.

As ICL, IBM, NEC and others all opt for the same software vendors, the various microcomputers are looking more alike - except perhaps for the price. "User friendliness" is a feature they have in common, allowing end-users to get their hands on their own data.

Once that has happened, the possibilities do not stop with the selling of everyday financial applications. Once the data is there it can be put to other uses - modelling and planning being the two which are already tipped to become the big software-revenue spinners of the Eighties.

So Software Month goes beyond the basics, with a look at the financial modelling and planning software which, even if it initially appears expensive, may save companies thousands of pounds in the long run.



Companies like CAP were founded by accountants who realised early the huge market for financial applications.

How to transform crystal ball predictions into factual reality

Planning packages can range from £200 to £20,000. . . Jim Horsley reports

The process of deciding where to go to get what you want comes down to identifying precisely what kind of system meets your company's needs now and in the foreseeable future. Most companies already have comprehensive historical accounting systems which may be manual or computer-based, and it is often a question of being able to use that information as the basis for forward planning.

For this reason several suppliers now sell integrated financial systems so that information can be automatically transferred from sales or general ledger files, for example straight into the financial planning system. Other suppliers have concentrated on the stand-alone approach so that managers within a large organisation or indeed the managing director of a small company can have a personal approach to building models and projecting plans.

Alan Peat, sales manager of management systems at SLA Computer Services comments: "Ninety per cent of our financial planning clients have their own computers to carry out the basic accounting and ledger work. The users are mainly decision-makers who want

to be able to do their own thing and therefore need their own financial planning facilities."

But what exactly are companies looking to achieve from their planning systems? According to Sutcliffe of EPS, the current economic climate is making short-term control a higher priority than long-term planning. Such areas as project and acquisition appraisal and management reporting are the key issues affecting many companies.

At a time when cash is in short supply in most industries, there is also a growing need to ensure that projects undertaken either on behalf of clients or internally are completed on schedule and within defined budgets.

Project planning is becoming another key area for computer systems and a number of companies are now supplying project systems.

Thorncroft Manor Services, for example, has converted a mini-based PERT project system to run on a range of microcomputers and as managing director Bob Cooper comments: "Up until recently only large machines could handle the number of activities required for large projects. With a 64K micro

we can handle up to 750 activities, which is a pretty large project."

The size of machine selected to run the planning system is becoming an increasingly important issue. Originally planning systems were either based on mainframes or on time sharing bureaux, as they had the capacity to handle large and complex models.

Today that is not the case. It is interesting to note that companies such as EPS, which have in the past concentrated on mainframe-based systems, are now developing micro-based products for a new and rapidly growing market area. Products such as Visicalc and Supercalc have made a major impact in the UK since their release.

Intelligence UK has sold 2,000 Micromodeller systems in a year and according to the company's sales director John Butler, at a total cost of £3,500 for a working system, people are prepared to have a go. It is this move to micro-based systems which has brought planning into the financial reaches of most companies and has opened the door to a large number of suppliers.

If Supercalc on Apples and Peas has stimulated the planning market, then other companies have

financial systems. As with most planning packages, Finplan is described as easy to use and has a two-tier approach to building models and forecasting. At the first level users build a model through a series of questions and answers - which Tomkins admits is a fairly slow process.

Once the user gains more experience, however, he or she can edit the modelling language directly which cuts a lot of corners and speeds up the process dramatically. Tomkins believes that in the future we are likely to see a new generation of micro-based planning packages which have modelling languages more directly related to user requirements and which have more powerful facilities.

It is this ability to provide systems which relate directly to end-user requirements which Intelligence UK has tried to address, firstly with Micromodeller, which runs on most CPM-based micros and secondly with Decision Modeller, which the company describes as a strategic planning model.

Sales director John Butler believes one of the key aspects to Micromodeller's success is that it is not menu-driven. Users have an English-type language which they use to tailor models to their precise needs. As the system works purely on a numbers basis, it can be used in areas such as marketing, stock control and production, as well as for financial planning.

The system has two other advantages over many standalone micro-based planning systems. Firstly, an interface is available which means it is possible to link Micromodeller into other compo-

It is this personal planning approach which is an important part of the success of micro-based

Starting out alone? Just started a company? Need money?

Getting the right sort of financing for your own company is crucial. Without it a computer supplier, distributor or software house could be a potential world-beater but still flop.

Computer Weekly and Barclays Bank have teamed up to organise a one day conference which will explain how computer industry entrepreneurs can raise money for themselves and their companies.

Speakers will include senior figures from Barclays, from finance institutions and from computer companies which have already been through the experience of raising cash and succeeded. Return the coupon below to book your place and learn from them.

FIRST TIME FINANCING CONFERENCE

Kensington Close Hotel, Wrights Lane
London W8

Thursday, June 17th, 1982

jointly sponsored by

Computer Weekly

and

BARCLAYS

Chairman: Sir Frederick Wood, Chairman of British Technology Group

0830 Registration of delegates

0900 Opening remarks

John MacGregor MP, Parlt Under Secretary of State for Industry

0915 Keynote: some basic definitions of the sources and kinds of finance
Sir Frederick Wood

0945 The role of the clearing bank

John Sanders, Manager, Barclays Bank plc, Oxford Street Branch

1015 Questions

10.30 Coffee

1100 Non banking finance: venture capital

Geoff Taylor, General Manager FFI Group

John Robertshaw, Director, United Computers & Technology Trust

how to get backing from the government

Dr John Parkes, Senior Principal Scientific Officer, Dept of Industry

1200 Questions and panel

Speakers from morning

1230 Lunch

1400 Business Plan: what to prepare and how to present it

Ion Lovett, Manager, Corporate Business Department,

Barclays Bank plc

Kevin Cahill, Associate Editor, Computer Weekly

1430 Raising the money: experiences of two computer companies

Eddie Bleasdale, Managing Director, Bleasdale Computer Systems Ltd

Noomi Langford Wood, Joint Managing Director, PME Ltd

1530 Tea

1600 Cash Flow: how to survive and grow up

Ron Weedon, Managing Director, Keen Computers Ltd

1625 Questions and discussion: bridging the gap between computer

companies and financiers

Led by Frank Sumner, Professor of Computing Science,

Manchester University

1715 Close

Please complete in CAPITALS and return to:—

Sue Bonnell, Room 1314, IPC Conferences Ltd., Surrey House,
Thrawley Way, Sutton, Surrey SM1 4QQ. Tel: 01-643 8040.

Please reserve.....place(s) for the First Time Financing conference to
be held at the Kensington Close Hotel, Wrights Lane, London W8 on
Thursday, 17th June, 1982

The fee is £65 plus 15% VAT (£9.75) per delegate. INVOICE WILL BE SENT.
The fee includes morning coffee, lunch, afternoon tea and documentation.

Mr/Ms/Ms

Position

Mr/Ms/Ms

Position

Please send confirmation of bookings to:

Mr/Ms/Ms

Company

Address

Telephone

A contribution to:

IT
INNOVATION 1982

SOFTWARE MONTH

From crystal ball to factual reality

• From page 17

ter systems for extracting information. Secondly a Micro Graph-power package is currently being released, which means that graphs produced within the planning system can be printed off on a five-colour plotter.

If Micromodeller makes no assumptions about the kind of application the user requires, then Decision Modeller certainly does. The system is designed to assess the impact of defined changes across the whole structure of the company.

Currently about 100 such systems have been sold, but Butler believes that they may have to make the structure of the system more flexible before it is more widely used.

Intelligence UK is planning to convert its micro-based systems to run on larger processors including DEC and Hewlett Packard systems, so that Micro Modeller can be used on a distributed basis. This is in marked contrast to companies such as EPS which are going from mainframe and mini-based systems down to micros.

It is impossible for any mini-based system to compete in a price war with the micro. At about £15,000 for a basic system, the mini has to draw on its strengths of a larger processing capacity and the ability to handle large volumes of data.

As Mervyn Robertson, systems director at John Bradburn (Computer Systems) comments: "There is a lot of interest in our microcomputer-based planning system. The biggest question is cost. They are

comparing our system with something like Visicalc or Micromodeller."

He adds: "We recently carried out a pilot study on behalf of a retail shop chain with 62 shops to create an operations plan for 1982. That was a large exercise in terms of data handling, which most micros would not have been able to handle."

Computing services companies have been hit by the dramatic growth in the micro market. SIA Computer Services' Feast says his company has not suffered because it has concentrated on providing services which cannot be handled by a microcomputer.

In terms of financial planning, SIA has the advantage over the mini or mainframe approach by being able to provide a selection of 20 or 30 different forecasting systems through a terminal on the user's desk and also by providing access to database systems covering a range of subjects.

Whatever the arguments, computer-based planning systems are rapidly becoming a fact of economic life for many companies. From the bottom of the range Visicalc package, through to the mainframe or bureau-based system, most organisations are realising that it is important to spend in the short-term to ensure long-term survival and stability.

As long as the suppliers provide the combination of hardware and software and the support and advice needed to guide companies through the learning process, then computer-based planning is a growth market which will gain in credibility.

Users get hooked on computerised planning

COMPUTER-based systems have an almost addictive quality which leads rapidly to them becoming a central part of the planning process. This was the major conclusion of small and large companies which have replaced manual planning techniques with micro and mini-based systems.

Financial director of Rexco Brian Taylor has used both a time sharing and a micro-based planning system during the last four years and has become increasingly committed to using modelling as a means of calculating sales and production targets.

"The use of such systems forces the directors to take a forward look at the position of the company and to evaluate the alternatives available. At one stage we were able to predict nine months in advance that it was essential to close down one of our plants otherwise we would have been insolvent," said Taylor.

"Because we were able to plan ahead, the closure went ahead much more smoothly. Planning on a manual basis is a long operation and you can get so involved in the process you lose sight of your objectives," he added.

Rexco, which currently has about 200 staff, is using the Fin-plan system based on the ACT 800 series. Taylor emphasises that to make the most of any financial planning system it is essential that users become competent in running their programs.

"The level of interest in financial planning has grown to such a degree, however, that many people within the company are now developing their own models. As well as cash forecasting, the system is used for the production of quarterly statistics, sales and management reporting and as a database system for information on projects."

"You need to know how the model works and where to home in to make any changes. The only danger in financial planning is that you can make far too many runs to produce alternatives for one plan. What it does is draw together people from all sections of the company," he said.

ICI has also experienced a similar response in the use of computer-based planning systems. Several divisions within ICI have installed the EPS FCS system which can be used on a wide range of mainframe and minicomputers.

Peter Whyte, an accountant in the controller's development group of ICI, said there had been an "explosion" in the use of financial planning after the installation of the in-house EPS system.

"Since the system was first introduced in 1978, the amount of storage capacity has been upgraded from 80 Mbytes to 300 Mbytes, and the number has grown from three to 13."

"It has enabled us to get rid of a lot of the legwork in producing data. We have also been able to generate more flexible reporting and in terms of cash forecasting it allows us to run a lot more scenarios," said Whyte.

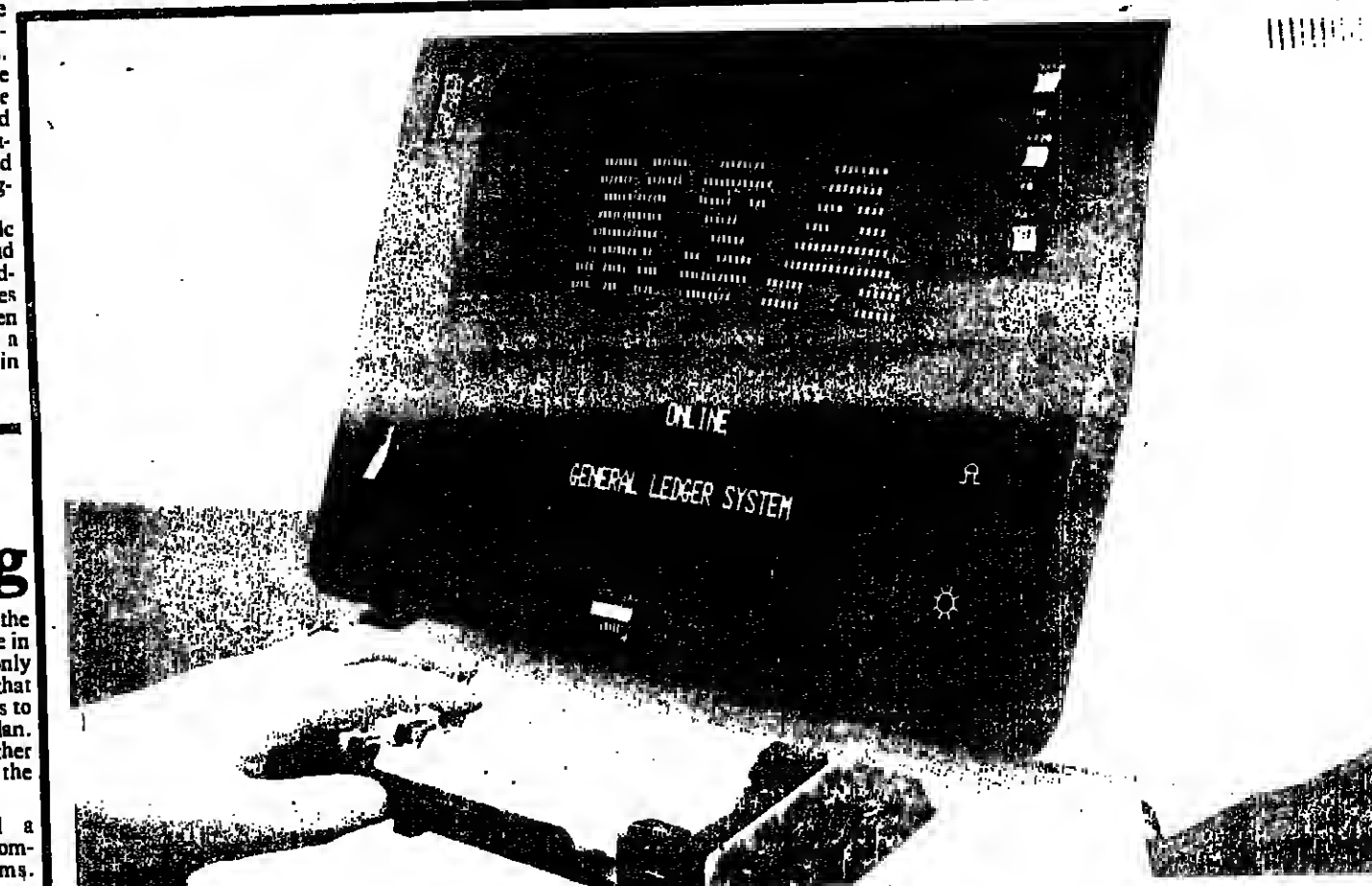
Whyte's department has used the FCS system as a high-level programming language to develop a range of models which people within ICI can use in a number of different ways.

"The level of interest in financial planning has grown to such a degree, however, that many people within the company are now developing their own models."

As well as cash forecasting, the system is used for the production of quarterly statistics, sales and management reporting and as a database system for information on projects."



It is impossible for mini-based systems to compete in a price war with micros.



'I need to know now!'

The General Ledger evolved as a record of all the financial transactions relating to your business. The problem today is—how quickly can you gain access to that information? And in what form?

MSA's General Ledger system offers you total financial control—On-Line—to give you instant access to the facts you need to support your management decisions.

With MSA's General Ledger system you specify the validation requirements, as well as the timing of reports and level of detail. Whatever you specify, the information will be readily available, without that 'end of the month' rush which is such a drain on company

resources. And with MSA's Easy Screen facility you can even design your own screen formats, without any programming experience.

If you would like to know more about MSA's On-Line General Ledger system, or attend one of MSA's free seminars, then simply complete and return the coupon.

MSA

The Software Company

Julia Chamberlain, MSA (Management Science America) Ltd., MSA House, 99 King Street, Maidenhead, Berkshire SL6 1YF. Telephone: Maidenhead (0628) 71011. Telex: 847400.

To: MSA (Management Science America) Ltd., MSA House, 99 King St, Maidenhead, Berkshire SL6 1YF.

☐ Please send me more information.

☐ I'd like to know more about MSA's General Ledger Management Seminars.

Name

Job title

Company name

Company address

Tel:

Mainframe computer model & number

CW88

THE WHO'S WHO OF FINANCIAL PLANNING.

Who are the most successful financial planning specialists in the world on mini, mainframe and micro systems?

Whose financial planning system is used by over 55 of the top 100 UK companies and over 750 major companies worldwide?

Whose financial planning system is offered by 18 major time-sharing bureaux throughout the world?

Which financial planning specialists employ 120 people with a combined experience in financial planning of over 400 years?

Whose financial planning system is available on more than 40 different mainframe, mini and micro computers—including CP/M, CP/M 86 and UNIX?

Who are the only financial planning specialists to offer compatible software on mini, mainframe, bureaux and micro computers?

Who offer full support and training in their software and consultancy on a worldwide basis?

Which financial planning specialists can best solve your company's financial planning problems—whatever the size of your business?

The answer to all these questions is EPS Consultants, the authors of the FCS-EPS Financial Planning System.

For further information on the FCS-EPS Financial Planning System, please send the coupon to the address below.

Name _____ Position _____

Company _____ Address _____

Tel. _____

I am interested in _____

FCS-EPS
The Business and Planning Specialists

EPS CONSULTANTS LIMITED, BOUNDARY HOUSE, BOSTON MANOR RD, LONDON W7 2QE. TEL: 01-579 6931.
OTHER UK OFFICES: CENTRAL LONDON, WIMBLEDON, BASINGSTOKE, MANCHESTER, GLASGOW AND BIRMINGHAM.

SOFTWARE MONTH

AI leads in the next computer age? Don't hold your breath!



Ferris is a consultant in the UK and US providing marketing and planning advice to computer vendors, particularly in the area of software.

FOR the first time, so-called expert systems can take the place of human experts in any field. Exaggerated and incorrect statements such as these, from a recent issue of Business Week, are turning artificial intelligence into a hot topic.

In fact, Business Week, normally august and conservative, used its front cover to announce ARTIFICIAL INTELLIGENCE — THE SECOND COMPUTER AGE BEGINS. And Datamation, highly regarded in DP circles, runs such provocative headlines as AI Comes of Age and AI — Key to the (Japanese) Fifth Generation.

All this makes for exciting stories, but to my mind, everyone's getting carried away. AI does have very valuable things to offer, but as far as commercial products are concerned, almost nothing is available now, and precious little indeed is in the works.

This week I shall try to show that the public's appetite is being prematurely whetted — the fruits of AI are unlikely to be ripe for several years yet.

The first thing you should know about AI is that whenever an AI expert gives you a neat definition of what his field is, take what he says with an immense grain of salt. So far, the experts have not quite been able to agree about what they do.

The facts are that AI researchers are clever people trying to do a number of clever, difficult, and interesting things with computers. Quite often, though not always, they try to make computers do things human beings can; quite often, though not always, they fail in their endeavours.

Equally, however, AI researchers have had their share of spectacular successes, any of which would astonish your average Cobol programmer.

Today's AI community is fairly small, largely restricted to a handful of universities such as Stanford, MIT, Carnegie Mellon and Edinburgh, and the research labs of a few major corporations such as Xerox, Fairchild and Hewlett-Packard.

Some major areas of AI interest are as follows:

Expert systems. Programs which can be taught about a very narrow area of expertise such as oil prospecting or disease diagnosis, and which can provide expert advice on the issues concerned.

Natural language understanding. Developing programs which understand ordinary typed English, rather than just "English-like" languages.

Mathematical theorem provers. Programs which can reason mathematically, and judge whether a proof is correct. Some of these are now so sophisticated that they can teach graduate level mathematics. Continuous speech recognisers. Understanding ordinary conversational speech, unpunctuated by artificial silences. A very nasty AI problem.

Vision analysis. Ways in which computers can analyse TV camera signals to determine what is represented. Also rather nasty.

Automatic program generation. Programs that can read a non-technical description of what a program should accomplish, and then actually write the program.

Intelligent robotics. Developing control software for devices varying from hand-eye systems to robot vehicles. Sometimes they are capable of planning and executing complex tasks.

Right now, AI is gradually moving from the research labs to the corporate world. Notably, a number of large companies are building extremely specialised expert systems, for in-house use only.

Much of the recent excitement has centred on these developments. Unfortunately, the commentators often overlook that such projects are highly turnkey in nature, serving the specialised needs of a particular organisation, and are unlikely to result in products suitable for general end users, DP managers, OEMs or the like.

So what real AI products are out there? When you count them up, very few indeed. Probably only two clear-cut candidates, in fact.

Artificial Intelligence Corp, of Waltham, Massachusetts, has a very nice natural language query system called Intellect. Using this, you can sit down at a CRT and type in questions in ordinary English (as opposed to a structured English-like language) about your corporate database, which Intellect then answers. Currently there are about 60 installations, so Intellect is certainly a commercial success.

The other unambiguous AI products come from Machine Intelligence Corp, of Sunnyvale, California. MIC is a new company selling vision systems — computers which can analyse TV camera input, and work out what is being scanned.

The systems are primarily intended for use in a manufacturing environment, often for the intelligent control of robotic arms.

SOFTSELL

Beyond these two firms, it is hard to find uncontentious AI product vendors. Radio Shack sells Eliza, a program which unconviningly pretends to psychoanalyse the user; few researchers would agree that this has much AI-ish about it.

Then there is The Last One, from DJ "AI" systems; a program generator for microcomputers which has absolutely nothing to do

with AI other than in its marketers' minds. (In fact, there are a number of such AI false pretenders.)

So for the moment, there is not much available by way of AI products. Does the immediate future look any better?

Again, don't hold your breath. There is a lot of talk and very little action.

Teknowledge has ideas for program development products, but no concrete plans. A company called Cognitive Systems, based in New Haven, Connecticut, has optimistic plans for several natural language systems for business users, but development is still at a very early stage.

Down in Texas a new startup is planning to develop an Ada teaching machine which may use AI technology; and in Palo Alto, Intellegentics is selling time sharing

access to very specialised non-AI software which might have AI technology incorporated in the future.

And then we come to the Japanese, who are making a lot of inscrutable noises. They are busily showing off impressive block diagrams for a future "fifth generation" AI machine. These have little boxes labelled with terms like "knowledge base", "problem solving machine", "access using natural language, speech, picture, etc.", "inference system".

All very AI-ish and impressive, until you realise that the Japanese don't know much about AI and thus these diagrams have more to do with very speculative hopes than any tangible development plans.

What concerns me most about all the recent publicity is that the world is yet again being set up for a

severe disappointment. Investors are being encouraged to dabble, and many will be intrigued to find that nothing sellable results from their expenditures.

Important and valuable work is going on in the AI labs, but commercial products are unlikely to proliferate until the end of the decade.

David Ferris



Intelligent robotics: Commander Bill of Warwick University negotiates a flight of steps.

ROUND UP

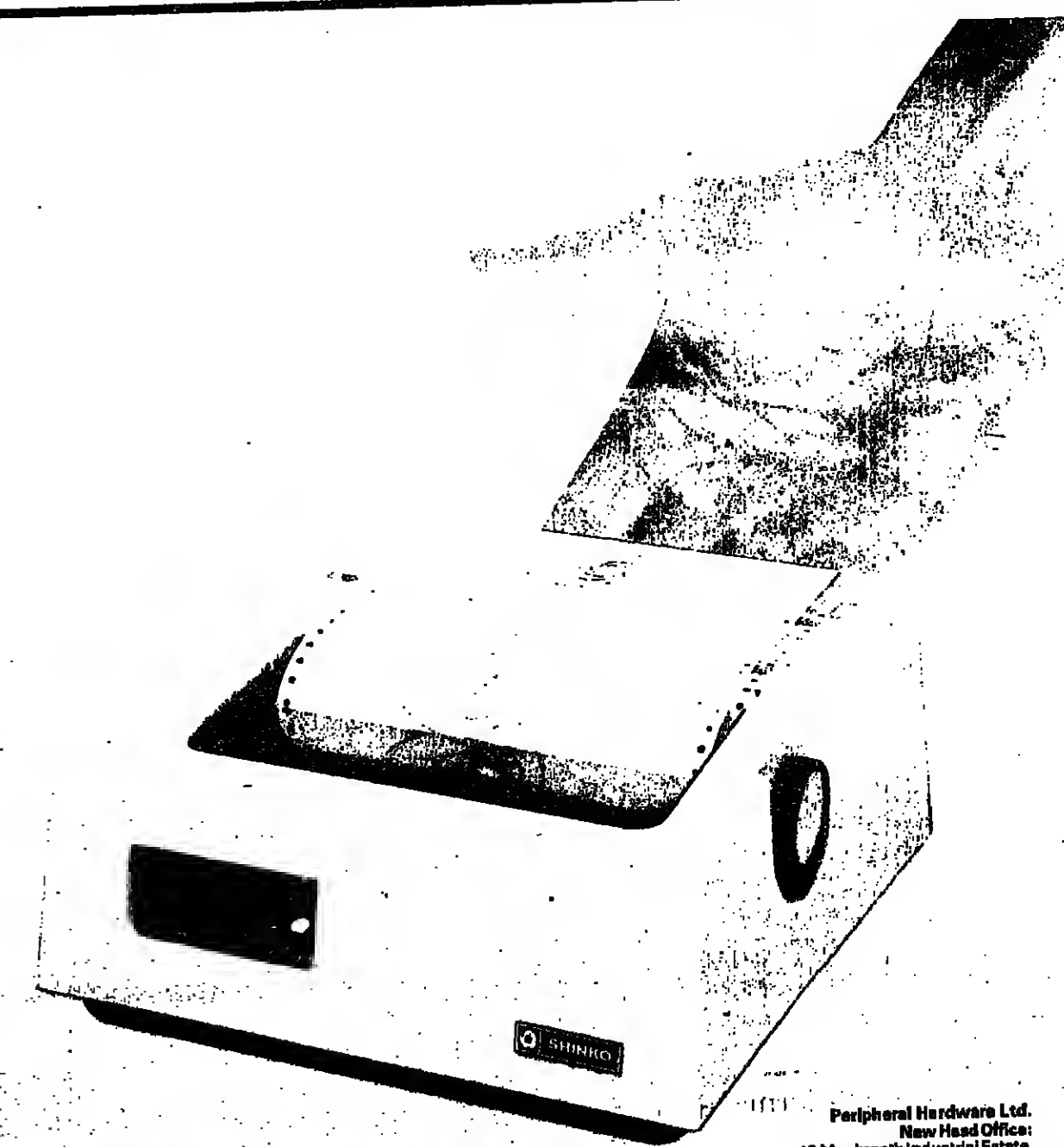
FOLLOWING ICL's lead, Hewlett-Packard and Digital Equipment Corp both announced schemes to assist third-party software suppliers.

Hewlett-Packard is launching a marketing programme called HP Plus, which offers incentives such as discounts on equipment on top of marketing assistance, while DEC plans to set up a directory of Digital Classified Software.

A microcomputer package claimed to offer the facilities of a standard CAD system for under £10,000 was launched by KGB Micros of Slough. Developed by project management specialists

Hytech Consultants, Micro-Designer accepts input from the keyboard, plotter feedback or via a digitiser pad and offers symbol rotation, repetition and shading as standard.

Microcomputer database system MDDBS is to become widely available in the UK following a link-up between US software vendor Intersoft and Software Enterprises and the UK consultancy Pictel. The joint venture, ISE-Pictel, is aiming to tempt large users in multinational corporations with the latest implementation: MDDBS III, for between £2,500 and £5,000.



SHINKO thermal printers—quick, clear... but quiet

The Shinko range of high performance thermal character printers and CRT graphic hard copy printers features quick, clear and silent printing for a variety of applications. Two types, for character printing, graphic printing or a mixture of the two offer: 7x11 dot matrix; 80 characters per line; 132 lines/min; 80x1024 dot graphics area; Centronics RS232C, GPIB and 2pm-A current loop selectable interfaces or RS170 composite video signal. Buffer options available. For full details of models and applications call or write:

Peripheral Hardware Ltd.
New Head Office:
13 Monkspath Industrial Estate,
Highlands Road,
Shirley, Birmingham.
Tel: 021-748 3033. Telex: 354256.

Southern Office:
Armfield Close, West Malvern,
Surrey KT9 0EA.
Tel: 01-841 4806. Telex: 922175.

Northern Office:
8 East Parade, Harrogate,
North Yorkshire HG1 1EL.
Tel: 0423 501283. Telex: 57548.

PHL

SOFTWARE MONTH

IS IT too late for decent ledgers in the computer industry? This is a question that many first-time users and suppliers are asking as an increasing amount of software fails to keep the promises made in the glossy brochures.

Because of the slowness to developing financial applications in-house, many users have bought personal computers out of their departmental budgets — sometimes with disastrous results.

But malpractice-oriented suppliers are fighting back, spurred on by the falling price of hardware and selling applications into the 16 and 32-bit microcomputer market.

This has two advantages for users. One, they cash in on a wealth of existing software expertise and, two, they get faster and more efficient systems which can also talk to their organisations' main databases.

"MSA addresses two main markets — the established mainframe user and new users," says MSA's managing director Michael Hunt.

"Traditional batch computers have got to breaking point — do they develop applications in-house or buy in? As hardware costs are coming down, we are jumping into the 4321 market earlier and they want packages."

"Today everyone wants online

Mainframe suppliers fight for accounting packages market

Disappointed users are wondering if good ledgers exist, says Chris Youett

and database applications. All our development work is oriented to making software more user-friendly."

He adds: "I expect to see a lot more online products and the company sees an integration of micros and mainframes. We must have software that is compatible to the central database. Modelling tools that can be used on a micro will make packages a lot more user-friendly."

ICL distributor Systemsolve has recently signed the Trsder Point agreement to market the ME29 super mini. Director Peter Weems sees the kit as "irrelevant up to a point. Selecting ledger systems depends on where the user wants to enter the DP market."

"It is important to pick the type

of ledger to suit the user's requirements and then pick the hardware to run it on. It is important they don't go to the manufacturer."

"Ideally, you should go to an independent supplier and try for a user-driven system," he adds. Some accounting practices have gone into the ledger market, largely because they could not find software good enough for their clients' applications.

At mainframe level, there is Knight Consultancy Services, based at Croydon. Its software is written in Ansi C and will run on IBM systems using the 360 instruction set, Univac, Honeywell, Hewlett-Packard, Wang, Burroughs, DEC VAX, Data General and ICL kit.

Knight, which is part of the

Price Waterhouse Group, was set up by Geoff Knight after a Honeywell user asked him to find a suitable ledger system.

"We couldn't find one," says Knight, "so we wrote our own. There was a need for software that matched UK and Continental accounting practices and could handle multi-currency and multi-lingual transactions. It is a British pack written by British accountants."

"There is a growing market for standalone machines, when they can talk to mainframes. It is not as simple as people make out. Operating systems, for example, are still not sophisticated enough for a good ledger system," he adds.

There is also growing concern

among data processing managers about what they consider the encroachment of micros within their organisations and the subsequent duplication of effort and facilities.



If it seems like you need a project control system to manage the project control systems on the market today...

Computer Associates Offers An Alternative:

CA-QUICKTROL™

You get better job planning, better allocation of resources and an effective control over costs, and WE CAN GET YOU THERE IN HALF THE TIME!

COMPUTER ASSOCIATES

COMPUTER ASSOCIATES LIMITED
St. Mary's House 16-20 High Street
Maidenhead, Berks SL6 1QH

Ring us at (0628) 70911



You make MVS work. Our CMF makes it work harder.

For fine-tuning MVS OPERATIONS including IMS, CICS, or TSO nothing captures the total systems view like CMF (Comprehensive Management Facility). CMF provides historical and real time MVS control, performance evaluation, and capacity planning, plus three new features: SHIFT, TRACE and IPS graphics.

MVS problems can cost you plenty.

MVS problems get more complex as your DP operation grows. Without the tools to properly maintain a system balance, costly (and potentially unnecessary) hardware add-ons become common lost resorts. CMF can give you the necessary information to make cost vs. performance decisions for your operation. In vital areas like real vs. virtual storage, CMF helps you achieve the optimum configuration for properly balance your systems workload.

CMF gives you the biggest picture.

CMF's in-depth real time displays show recent activity compared to historical trends, plus additional reports on machine status service time, and CPU utilisation. This gives the systems programmer immediate access to important data without scanning voluminous batch reports. When invoked, CMF gathers and analyses statistics, generates reports, and provides tuning information, all with minimal overhead.

CMF optimises storage, captures data and displays the results.

For more efficient organisation of your disk storage, CMF uses DSO (Data Set Optimiser) to determine where related data sets are located on DASD and make specific recommendations for optimum placement. DSO even calculates percentage improvements for you. CMF also has five colour graphic displays for management reporting, with Kiviat, tabular, bar, IPS and pie graphs, plus exception reports.

Name _____
Title _____
Company _____
Address _____

Send me information on:
☐ MVS + CMF
☐ Capacity Management
☐ Information Management
☐ Productivity Tools

The European Software Company
Harder Working Software

The European Software Company Ltd, Kingswick House, Sunninghill, Berkshire SL6 7BJ, England - Tel.: 0990-23491, Telex: 848980
LONDON · DUBLIN · DUSSELDORF · MUNICH · PARIS · THE HAGUE · STOCKHOLM · MILAN · ROME

Small computer users are often conned into buying sub-standard software Chris Youett passes on some tips

'95% of micro ledgers made by cowboys'

MANY users are now getting their first taste of computer power on a micro — and are finding it often turns out to be a sour experience. Poor software, too-existent documentation, limited after-sales service and a slow turn-around are common complaints.

Phil Keltingley of Surrey-based Micro Computer Business says, "95% of the ledgers currently available were created by part-time programmers on ZX81s in their back bedrooms."

"Their complexity is too-existent and the packages are limited. One of the first things a user puts on his system are the ledgers. It is a recipe for disaster."

"The real problem is that it is very easy for cowboys to operate from home. It is a bit frightening. Some of the ledgers on the market haven't even been debugged after two years."

Keltingley advises users to make sure the package will run their individual systems in terms of data volumes, speed of operation and the size of account number. "Take your accountant or independent consultant along with you," he says. "It is worth laying out £300 for the advice. The buyer must beware. The smaller the machine, the more likely you are to be ripped off."

Independent consultant Bill City of Guy Associates in Coventry says his company has never been associated with a package which hasn't had some problem or needed tailoring. "For example, few invoicing packages have quantity fields that have decimal places," he says.

"If you deal in items sold by the length, it is quite likely you will send out, say, 2.5 metres of tube. I was recently examining a pack which could not cater for a non-stock item."

"I don't understand why it wasn't designed properly — and it is supposed to be a new piece of software."

He added: "The approach of suppliers is fairly inflexible. They don't seem able to modify software quickly."

Some micro users have become so disillusioned with the standard of ledgers that they have written their own and put them on the market.

One example is Business Solutions of Ilford, Essex which is an offshoot of an accounting practice. Director Stephen Page explains: "We would send a client's work to a bureau and it would come back a week late and full of holes. We looked at the various micros and packages — most of which were rubbish."

"We used the US Osborne software as a basis for our own packages and tested it on our own clients. We took our programmers and have now got some decent

ledgers, using the Pearl program generator and running under CPM."

"Big, complex systems are not really suitable for off-the-peg software. There is a misconception that the application will run immediately. We have had to support our end users quite heavily."

"A lot of users are now getting rid of their first purchases and there are too many 'pirate' dealers who just want to sell, then fly the coop."

"Too many dealers don't understand basic accounting, when they should. Accounting systems are not simple packages," he adds.

Business Solutions also markets a financial modelling package for micros called Mars (Management Accounting and Reporting System). It runs on Superbrain, Rank Xerox 820, North Star Horizon, Digital Microsystems, Altos and Cromemco kit.

It is menu-driven and can provide user-defined reports, budgeting and planning data, modelling with WHAT IF facilities and will allow users to explore different management strategies. It was written by Sapphire Systems of Benfleet, Essex.

Perhaps the answer lies in products like the Mercury operating system for Apple microcomputers which is being marketed in the Midlands and North by Templeman Software of Stratford-upon-Avon.

Mercury comes on its own board with eight PROMs. Software is written in Apple assembler. According to Templeman director Myles Pollock, "Financial applications never fit anyone's system, so they need tailoring to a greater or lesser degree. This is usually relatively easy to do, but it can take up to a week."

"But Mercury allows users to tailor or write their applications in far less time. I estimate the listing for a standard 20K financial package is 10 to 20 pages."

"On Mercury, the listing is reduced to 10% of the original. It returns the whole software market on its head. Mercury has the power to join up to 15 Apples with the 16th controlling a disc, thus giving true distributed processing and this is the machine that was made to play space invaders on."

"The product is only saleable to programmers and not to the end user so it won't cause any redundancies. Mercury requires the programmer to be a bit of an analyst."

"It uses masks like CPM and the catalogue sorts the data alphabetically whether it is a file, program or mask. If I want to type in the data, check it, display it and modify it with 20 fields, my program consists of LET '1, 99' Pollock adds."

Upgrading the system

ONCE the user has gained sufficient experience with the standard ledgers, he or she may feel that the system should be upgraded to run financial modelling and report writing applications.

Some packages have these facets as standard and facilities range from simple to very advanced. There are also lots of financial modelling packs.

Thornicroft Management Services of Leatherhead, Surrey, has a modelling package called Trameash which is written, usually, in Fortran IV with some Assembler. It runs on Harris or DEC VAX kit.

Trameash covers WHAT IF problems, risk analysis and probabilities on turnover interactively. Thornicroft's Bob Cooper says users should take care before deciding to implement a modelling package.

"You should have a pretty good idea on what you want to model, what variables there are and whether the end user is prepared to go on a course to learn the language," he says.

"Then you should identify the problem and look at the packages available to solve them. Ask how many users there are and whether you can talk to them."



POLLOCK... Financial applications always need tailoring.

THERE ARE THREE THINGS THAT MOST D.P. MANAGERS COULD DO WITHOUT

With the continuing growth of computer applications in business and industry, the role of the Data Processing manager has become more important and challenging than ever before.

However, there are three areas that most D.P. managers would agree are, in plain language, a pain in the neck.

Payroll, personnel and pension administration.

They are complex,

time consuming, and frustrating. The requirements are forever changing, the results always required yesterday.

They burn up far too much of your department's time, and in many ways aren't really what D.P. is all about.

Yet the effective operation of manpower administration systems is essential to the smooth and efficient running of a company.

So you shoulder the burden, and soldier on, putting up with these three big problems.

However, were you aware that for some time there has been a simple solution at hand? One that will not only relieve your department of pressure, but will provide your company with a proven and effective series of systems which can be tailored to specific requirements, and are automatically maintained to meet external demands such as legislative changes.

Peterborough Software offer three systems — Unipay, Unipersonnel and Unipension — which have been developed

through nearly twenty years of experience. All three systems are based upon a simple concept. The central function and basic requirements of manpower administration systems are the same for any company. The complexities arise through the variety of input calculation and output requirements, and their frequently changing nature.

Peterborough Software developed their systems based upon central, common, programs. These then became completely individual packages by the use of the parameter file concept, which means that the detailed application requirements of any customer's system, and indeed changes to those requirements, are accommodated without any program

writing or modification at all.

Our systems are quick and easy to install and are designed for operation by the user department, thus minimising D.P. time. Free format inputting means little or no requirement for new documentation, and both standard and ad hoc reporting is quick and easy. Each system is designed to interface not only with other

Peterborough Software

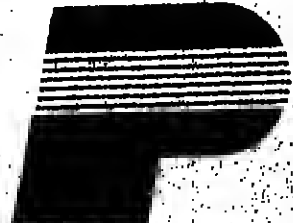
systems, but with your own user written systems too, so you won't need to be forever re-entering common data.

All three systems are proven in operation, with data validation checks built in and audit trail facilities that the most demanding auditor will approve.

Unipay, Unipersonnel and Unipension are designed to suit a wide range of mainframe computers, including teleprocessing versions, and are backed up by a comprehensive support programme, including user education and statutory maintenance.

To get the full Peterborough Software story, telephone Peter King on 0733 41010, or write to him at Peterborough Software, Borough House, Newark Road, Peterborough PE1 5YJ.

Then get ready to forget the problems of manpower administration, and concentrate on some really productive data processing challenges!



PETERBOROUGH SOFTWARE

Our software makes sense of your hardware

A user may soon tell a robot to carry out a task without having to describe how to do it. . . Phil Manchester reports

Programming the robot to solve its own assembly problems

EARLIER this year, the Science and Engineering Research Council announced its sponsorship for a working party to examine the requirements for a programming language for assembly robots.

The SERC initiative is, perhaps, a reflection of what is a minor revolution in the robotics research community — the transition from what might be called sophisticated machine tools to highly flexible general purpose robots for assembly tasks.

The group has in fact existed for a couple of years informally and includes robotics researchers from four universities and a number of commercial companies.

Underpinning this development is a body of knowledge about programming assembly robots from a number of sources.

Mike Tedd of the University of Aberystwyth, a consultant to the software house SPL, explains it as

"a growing interest in programming robots offline".

As Tedd sees it, most commercially implemented robots are currently programmed by example in what is called in robotics jargon "teach mode". The best known example of this is the paint spraying robot without which no TV program on robots is complete.

The operator performs the task which is recorded on some form of tape. The robot will repeat the task every time the tape is loaded and will go on doing so until the equipment either wears out or a new program is recorded. This recording process is viewed as a slow and laborious method of setting up a robot and leaves no room for flexibility in the process.

The move, therefore, is now towards offline programming. As Tedd explains: "In a perfect world with complex short runs the way forward is thought to be offline programming — ideally expressed in some form of language."

The key phrase is "complex short runs". Ultimately, the current research is aimed at producing a means of programming robots in such a way that they are able to solve problems in assembly themselves.

Unimation's Puma robots, for example, offer a programming language (VAL) which goes some way in this direction but it relies upon the engineer charged with the programming having a clear idea of what is required as well having to describe how the task is to be performed.

"He knows all of the situations that may occur," said Tedd. "But we need much higher level languages where the engineer describes the problem and lets the robot sort out how to solve it."

"It is very hard," he went on, "particularly when you throw in the idea of flexibility and realise that you are dealing with a world full of uncertainties."

This takes the subject into the realms of artificial intelligence as the robot is required to perform some elementary reasoning about the problem and how it is to "solve" it.

It is no surprise, therefore, that one of the major developments in this area emanates from the University of Edinburgh's Artificial Intelligence Laboratory. A group led by Robin Popplestone has been working with SERC sponsorship for a few years now.

The language they have come up with is called RAPT (Robot Automatic Programming Tool) and is referred to by one of Popplestone's team as a "model based language".

"Pat Ambler of the AI lab explained: "It is really a development of APT — a language for numerical control machinery."

"It has a syntax like APT which enables us to take advantage of the familiarity that engineers have with it. But there is an awful lot of mathematical reasoning behind it because assembly processes are about picking objects up and putting them on top of others."

"What you need to be able to say is pick up part A and attach it to part B," he went on.

The RAPT language is currently running on the AI lab's DEC System 10 using the AI language POP 2 for its implementation. The Edinburgh group is, however, much more ambitious about future work in this area. Ambler looked into the future and suggested that the real breakthrough would come when such systems could take sense data into consideration.

"Using a camera system we can give the robot some vision as well as being able to derive data about touch and applied forces. We are currently working on the sort of assumptions that can be made at the planning time. It depends

upon the sort of support that is forthcoming from industry and SERC but there could be some breakthroughs within three years," said Ambler.

Tedd described Edinburgh's RAPT language as the world leader in this area. But there are other efforts taking place in the US — particularly in IBM.

Although not released in Europe as yet, IBM has a robot assembly language of its own. More details of this language and what it can do is expected to be forthcoming fairly soon and both Ambler and Tedd were excited about the upcoming meeting of the SERC working party to be held at IBM's UK research facility at Harlow.

As part of the SERC working party, IBM has an interest in both its own work and Edinburgh's.

Its language, AML (A Manipulator Language) is described in a recent paper presented by David Grossman of IBM's Yorktown Heights laboratory at the Robot VI conference in Detroit at the beginning of March. "AML is both a good robot language and an excellent computer language, combining some of the best features from Algol, APL and LISP in a blend particularly suited to robot programming."

AML was developed from earlier work by IBM which began a decade ago. According to Grossman, IBM's work on model-based systems, as opposed to teach mode systems, began in 1975.

Grossman also refers to another project in developing model-based robotics programming — EMULA which allows AML programs to be simulated offline with optical graphics display and some of the effects of sensory feedback.

IBM is extremely keen to harness the power of robots for its own internal use. Grossman outlines a number of current applications, including one for small batch assembly. It is, however,

"It is a pity there are no initiatives in the UK to solve some of the more mundane problems."

fairly cagey about tying its research work to any future product announcements.

AML, however, is in the real world (in the US at any rate) already and is likely to form a major contribution to the future development of robot languages.

In addition to IBM there are number of other commercial concerns involved in serving SERC through the working party, including Philips, GEC Marconi, Rolls Royce, Hall Automation and British Robotics Systems. The latter has links with SPL, which has been making a significant mark in the whole area of artificial intelligence. The University involvement comes from Hull, Cranfield and Cardiff as well as Edinburgh.

It is to be hoped that SERC's initiative goes beyond pure research and into the area of product development or the UK will be left behind in the race to turn good ideas into commercial reality.

As Mike Tedd commented on the advanced nature of the Edinburgh work: "RAPT is a leading contribution but it is a pity there are no initiatives in the UK to solve some of the more mundane problems."

That, presumably, is why IBM's work is mainly about

The mainframe upgrade path can be seen as a delight for the corporate empire-builder, says Ivan Newman

'Keep it costly by keeping it complex' is IBM strategy

"What IBM now has to do is to sort out the tangle of operating systems to reduce machine overheads and cut . . . cost (to the IBM user)."

SO concluded a recent leading article in this paper. Odds on, however, that this hope for a reduction in cost is far from the corporate mind.

To find the evidence for this conclusion one had only to refer to a DP salary survey in the same issue.

Broadly the conclusion of the survey was that increasing DP staff shortage is likely to force up wages. Both the leader's subject — IBM's mainframe upgrade policy, and the survey results — higher DP department manpower costs — are two different sides to the same corporate mentality. This corporate mentality comprises not only corporate strategy but also the corporate manager's/executive's motives.

What drives the corporate executive? (Executive can be taken to mean any person within the organisation who has powers of execution of targets, budgets and/or manpower). Briefly stated, the executive's driving force is the satisfactory achievement of output figures, working to budget and maintenance of manpower levels.

The plug-compatibles' higher market share is a result of their fitting into IBM strategy

"The plug-compatibles' higher market share is a result of their fitting into IBM strategy"

In the words of Battalia and Tarrant's The Corporate Eunuch, "The harried executive (knows) that he is to be judged by results. However, the authors caution in that same book, "Perhaps the most distinctive boon — and ultimate bane — conferred upon the manager is the privilege of isolation from reality."

One result of this is that "(the executive) finds himself increasingly forced into a position where he juggles figures . . . to produce these results". Perhaps the "juggling" is achieved and therefore the judgment on results during the annual round of re-negotiating targets, forecasts, or budgets which often lays low the corporate management for some weeks.

Perhaps it is even on the size of increase or decrease that the executive's reputation is likely to be built. The targets themselves have displaced their proper achievement in the judgment of relative success or failure. But what has this to do with mainframe policy? Just this:

Top DP staff also fall into this definition of corporate executive and so that sense are probably also driven on among their peers by just such factors as DP or management services department size, ratio of chief senior analysts to senior systems analysts, increase in overall budget, increase in capital budget, etc.

What, then, about the hope expressed in the leader of cutting costs to the IBM user (and eventually by knock-on effect other users)? If the choice is to offer "more bang for less buck" i.e. reduce costs absolutely, then the executive faced with spending a given amount could well decide

not to accept the offer for fear of not spending a budgeted or allocated amount, because too much understanding in any one year might lead to a reduction in budget next time.

However, if the choice is more bang and more buck the corporate acceptability might be much greater.

These last points could be the clue to IBM's strategy throughout its product range which, viewed cynically, could be described as exploiting the traits of corporate one-upmanship or alternatively be looked at as expert marketing acumen.

In short, the strategy appears to be one of keep it costly by keeping it complex and relatively incompatible. By so doing, the IBM upgrade path is strewn with the need for more capital budget, more manpower, and more administration to the probable, if veiled delight of the responsible corporate decision maker who sees his empire growing through "genuine progress".

Hence the multitude of operating systems, terminal types, conversion requirements.

As far as the plug-compatibles are concerned, this approach weakens because it divides. Just so long as there is such a plethora of complexities, machines and architectures the plug-compatibles will be forced to divide their efforts in order to offer a broad enough range to compete.

However, too broad will result in under-investment and under-development in the product, while too narrow an offering is a gamble of large proportions. No doubt the IBM corporate watch-phrase is "keep 'em guessing".

The plug-compatibles' increase in market share, at cost to the traditional mainframe makers, is a result of being able to fit into the broad IBM strategy of not having a compatible approach while still offering more machine for money.

In terms of the traditional mainframe competitors offering greater upgrade compatibility they have suffered reductions in market share. Why? Look again at the corporate man. The very last thing he wants to happen is for the manpower requirements to fall, or the capital budget to be under-spent, or the backlog of work to fall significantly.

Given an equipment range offering the same or more power as equivalent IBM, obviating the need for conversions and reducing the complexity all at a lower real cost than these features, desirable though they are, may be seen as the ruination of a nice corporate empire.

Who would buy the features? Certainly not, the person whose empire is threatened. That is the wrong person!

What lessons can be learnt from this? Perhaps one for IBM-watchers. Namely, do not look for necessarily logical hardware and/or software decisions in terms of the end user but rather permutate the options in a marketing sense to:

- Assist the corporate empire builder.
- Lock out traditional competitors.
- Keep the plug-compatibles guessing.
- Increase user dependence.

If that appears cynical, take heart, for every other manufacturer is trying, or would like, to do the same; however everybody sees IBM doing it.

The author is sales training manager for Burroughs.



"IBM's upgrade path is strewn with the need for more capital budget, manpower and administration."

Announcing . . .

COMPEC SCOTLAND

. . . Scotland's own professional computer show.

The highly successful Compec exhibition of computers, systems, peripherals and software is to be held in Scotland for the first time this year.

Compec Scotland in Glasgow between September 7-9, 1982 will allow companies selling into this important market to focus on computer users throughout the country.

Surveys of visitors to computer exhibitions demonstrate that users prefer to attend a show which is local to them. Compec North was enthusiastically welcomed in Manchester last year, and has expanded for the 1982 event in June.

Now Compec Scotland with a venue in the centre of Glasgow ensures a place at the heart of another key market.

For information about exhibiting at Compec Scotland contact Chris Timmins, Executive Director, IPC Exhibitions on 01-643 8040 Ext 4869. Or clip the coupon.

Please send me details of exhibiting at Compec Scotland.

Name
Job title
Company
Address
Tel
Signed
Return to: Chris Timmins, Executive Director, IPC Exhibitions, Surrey House, Throley Way, Sutton, Surrey SM1 4QG.

Practical Computing

Fall of the giants — rise of the Cowboys?

Reviews:

IBM 1000

Genie I

MBasic

Supercalc

Whitehall game

Atom assembler

Pet machine — code subroutines

Your guide to the world of personal computers.

Computer supplier? Computer user? Whatever your involvement with computers, you cannot afford to ignore the personal computer revolution.

selection of articles and regular features about personal computers.

At all good newsagents. For only 80p.

Or take out a subscription by completing the coupon.

To: Marketing Department,
IPC Electrical-Electronic Press,
Quadrant House, The Quadrant,
Sutton, Surrey SM2 5AS.

Please send me Practical Computing for one year (12 copies)
I enclose a cheque/P.O. for £10 (UK) £16 (Overseas) made payable to IPC Business Press Ltd.

Name
Address

That's why more and more people are turning to Practical Computing. To keep them up-to-date with the latest trends and developments at the micro end of the market. Because Practical Computing gives you more . . .

More about computer equipment. Down-to-earth reviews of personal computers and peripherals such as printers, terminals, VDUs and disc drives.

More about software. How to write it. What to look for in business software. Evaluations of software packages to take the guess-work out of your software purchases.

More about applications. What can you do with a personal computer? Case studies of the ways in which people as diverse as businessmen, manufacturers, doctors, scientists and teachers are using computers in their everyday work.

It all adds up to colossal value. The best and most informative

PRODUCTS - 1

Round the world in 20 secs

REFLECTING the move to even smaller electronic circuitry, the Infotec 6100, a new microprocessor-controlled digital facsimile from Kalle Infotec, can send an A4 document across town or around the world in just over 20 seconds.

The machine is a Group 3 model (with Group 2 compatibility) and is designed to keep transmission costs down to a minimum while retaining high-quality reproduction.

Although the Infotec 6100 is compact the state of the art technology enables it to transmit sharper, clearer copies of typed, handwritten, drawn or photographic material over any distance using conventional telephone lines, say the makers.

A feature of the Infotec 6100 transceiver is its ability to transmit up to 64 shades of grey. This means that photographs (both black-and-white and colour) can be faxed with very little loss of subtlety in depth of shading.

Operating flexibility is one of the key features. Transmitting documents is simple; the operator



The Infotec 6100 facsimile from Kalle Infotec.

just telephones the destination, inserts the copy to be faxed, then presses a button. Return mail can be received on the same call, so there is no need to re-dial.

The Infotec 6100 eliminates the need for constant operator attendance with its automatic transmit and receive features.

Functions include automatic dialling, a reduction facility, and the automatic document feeder which allows up to 50 documents to be transmitted unattended.

The Infotec 6100 costs £7,295. Kalle Infotec (CW), 155 Gower Street, London WC1. Telephone 01-388 7271.

Step forward in factory data collection

THE Series 3000 Factory Data Collection Facility (FDCF) introduced by Honeywell combines an extensive range of terminals and systems software designed to give manufacturing industry increased monitoring capability and resource control relevant to labour, materials, work in progress, finished goods inventory, and other areas of factory operations.

FDCF works as a standalone facility via the DPS 6 or Level 6 minicomputers, or it can run as part of a distributed processing system in association with Honeywell's medium and large computers or with other compatible host processors.

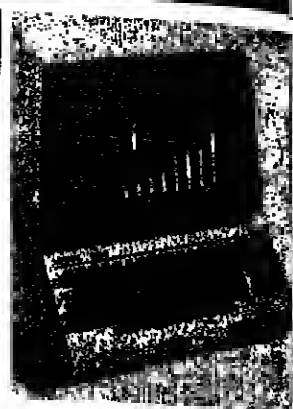
In its DSB (Distributed Systems Environment) role, FDCF equipment can be deployed at many different locations, and at selected work areas within those locations, each collecting data (eg on labour reporting, quality monitoring, stock-room control, work in

progress, time and attendance) which, formed into transaction files, can then be transmitted to the central computer system for processing.

According to Honeywell, the Series 3000 FDCF offers new levels of performance and cost benefits, including savings in inventory, more accurate product costing, improved information flow, reduced paperwork, increased productivity, better component control, lower downtime as a result of more efficient machine monitoring and maintenance, faster machines re-start, and easier progress chasing.

A typical price for a distributed system comprising a mixed cluster of 20 terminals would be £75,000. A standalone system comprising a small cluster of six terminals is typically priced at £38,000.

Honeywell Information Systems (CW), Honeywell House, Great West Road, Brentford, Middx. Tel: 01-568 9191.



The Visual 550.

Graphics terminals

THE Visual 500 and 550 range of graphics terminals providing Tektronix 4010 compatibility, 768 x 585 resolution on a 14 inch screen for less than £1,600, is now being marketed by Techex.

The 500 and 550 models are compatible with standard business, laboratory and scientific software including Plot 10, Display, Tell-a-Graft and SAS/Graph.

Techex (CW), 5b Roundway, Elliott Road, West Hove, Brighton, Tel: Northbourne (0316) 71181.

PRODUCTS - 2

Data displayed in 16 colours on multiple screens

DIGITAL Equipment Company's family of colour graphics products has been further enhanced. The VT36 is an intelligent display control sub-system which enables data from a PDP-11 or VAX-11 to be displayed in up to 16 colours, as minis or graphics, on multiple display screens.

It also performs dynamic picture update, automatically displaying changes in the user's database, as they occur.

Developed as a complete package, the VT36 combines an integral 16-bit microprocessor-based controller with sophisticated graphics software. All picture display tasks are performed internally, leaving the user free to concentrate on his application.

The dynamic picture update facilities make the VT36 particularly relevant to applications such as process monitoring and public utility network control, where the

speed with which operators and system controllers can react to new conditions is often crucial.

Up to four microprocessor-based VT36s can be connected via serial synchronous lines to a host PDP-11 or VAX-11. Each VT36 can in its turn support up to four display stations (video controller and monitor), but with a total maximum of 18 displays on one host PDP-11 or VAX-11 computer.

For a low-cost solution to applications where high system throughput is not required, up to four VT36 display stations can be configured locally on a PDP-11.

The VT36 is designed as a totally interactive system. It is always supplied with a joystick so that the user can simply and quickly interact with the system.

Digital Equipment Company (CW), PO Box 110, Reading RG2 0TR. Telephone: (0734) 868711.



The 1425 flat bed ploter from Benson.

Plotting is controlled directly by operator

DESIGNED with the draughtsman in mind, Benson's model 1425 flatbed plots at up to 50 cm/sec and features an 80 x 24 character screen with query keyboard housed with the electronics in a mobile, free-standing unit.

Many plotting functions can now be controlled directly by the operator via the keyboard and screen, including individual specifications of pen speed, acceleration and pressure to ensure optimum quality of inking regardless of pen type chosen.

The screen can be used to give full prompts of all operator controlled functions and messages from the user program. A reprint

function allows for exact overplotting on to a previously created drawing by digitising its size, position and orientation and precision alignment on pre-printed media is assisted by use of a magnifying lens fitted to the pen carriage, and portable hand-held joystick control for pen movement.

The 1425 can simultaneously accommodate four different pen types for plotting on single sheets of pre-printed or plain papers, including all the media normally found in a drawing office.

Benson Electronics (CW), Techno House, Redcliffe Way, Bristol BS1 6NH.

Addition to printer series

TWO new 132-column miniature printers have been added to Mannesmann Tally's MT100 series, announced at Compec'81.

The MT130 is the simpler 100 cphs version; the MT140 offers 160 cphs and more options. Both are compact and low-cost. One-off retail price for the MT140 is £630.

The series is aimed at the microcomputer and the small

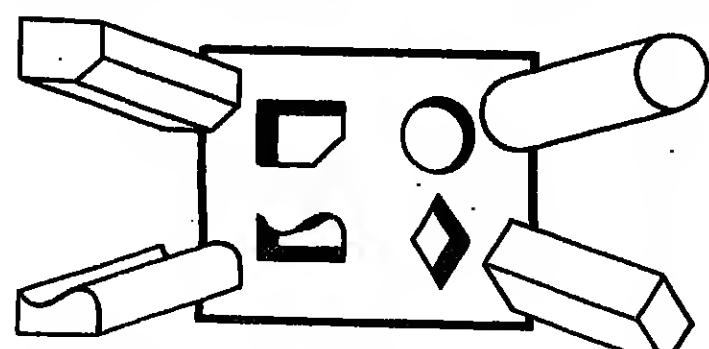
system. The printers are said to be quiet and easy to use.

Standard options include two-colour and OCR printing, eight character widths, programmable forms control and enhanced paper feed.

Mannesmann Tally (CW), 7 Cremyll Road, Reading RG1 8NQ. Telephone: Reading (0734) 580141 Telex: 847028.

Now available as a book
£8 post and packing free

DATA ANALYSIS



... a method of analysing the operation of a business to allow the best computer system design.

A major reason for the development of costly and inflexible computer systems is the failure to describe the business, its data and how it operates.

The Data Analysis methodology is a means of understanding what the business does independently of any consideration of the systems which may be used to computerise parts of it, and for analysing its data

independently of the applications to which it may be put.

First published as a major series in Computer Weekly, Data Analysis was written by Rosemary Rock-Evans and based on a methodology developed by Ian Palmer. Now reprinted in book form and fully illustrated, it is available from Computer Weekly.

Simply complete the coupon below.

Please send me copies of Data Analysis at £8 each including p&p.

I enclose my cheque for £ made payable to IPC Business Press Ltd.

Name
Company
Address

Send this coupon with your cheque to:

General Sales Dept.,
IPC Electrical-Electronic Press Ltd.,
Room 205, Quadrant House,
The Quadrant, Sutton, Surrey SM2 6AS.

Postcode
Date



The BDP double sheet feeder.

Automatic feeding

A RANGE of automatic sheet feeders available from BDP (Word Processing), is designed to automate the feeding of paper and envelopes to the printer.

Designed as add-on units which can be attached to all popular word processors, including IBM and Rank Xerox, BDP sheet feeders require no screws, bolts or special tools. They feature an advanced separation technique which enables paper weights from 60 to 100 gsm and five-part multi-part sets to be used interchangeably without

any necessity for adjustment.

Depending on the model, BDP sheet feeders handle standard letterheads or form sets from 6 to 12 inches wide and up to 14 inches long. Double sheet feeders are also available to hold letterheads and continuation sheets or any two different types of paper. An optional envelope feeder will accommodate envelopes up to 12 x 9 inches.

BDP (Word Processing) (CW), Hill House, Clock Tower Road, Isleworth, Middlesex. Tel: 01-560 7905.

Genie of the micro

THIS month sees the launch of the Hong Kong-built Genie III microcomputer, which is marketed in the UK by Lawe Electronics of Matlock, Derbyshire.

Genie III is a fully expanded and integrated microcomputer, containing 64K of RAM, built-in screen, dual disc drive with double-density storage facility.

The basic Genie III computer will retail for about £1,600 and the professional purchaser can expect to pay up to £3,500 for a complete system including all peripherals and accessories.

Lawe Electronics has sold more than 10,000 Genie I and II home computers since it moved into the market three years ago. Lawe Electronics (CW), Chesterfield Road, Matlock.

Tape prep system

COUNTING House Computer Systems has launched a low-cost standalone numerical control tape preparation system, GNC-1. It incorporates a powerful Computer Automation desk minicomputer and now offers the power of

high speed Winchester disc technology combined with the GNC parts programming system, GNC-1. GNC-1, a picture of the component, the machine and the tool is displayed on a graphics screen. As soon as an operation is commenced, the tool movement is instantly shown on the screen.

This enables the programmer to check each stage of the program for errors and collisions.

Counting House Computer Systems, Foreman St, North, Bury St Edmunds, Suffolk. Tel: 0284 68921.

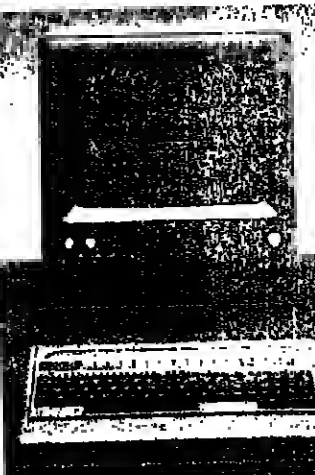
Graphics at high resolution

WITH its fourth major new product release this year, Westward introduces the 2015 graphics terminal.

Based on Westward's 2000 terminal, the 2015 offers high quality graphics, with a resolution of 1024 x 768 pixels. The user can select the most comfortable operating position and has control over viewing angle, distance and screen tilt. The detached keyboard provides a selection of colour-coded keys and comes with a unique document holder, aiding data entry.

Key features of the terminal include programmable line styles, a "write-through" mode, choice of four character sizes and up to 8448 characters simultaneously displayable.

User options include plain paper or electrostatic copiers; graphics tablet for rapid input of diagrammatic data, menu picking and cur-



The new 2015 from Westward.

sor control; and a four-page VDU buffer giving high speed scrolling and access to command information.

Westward Micro Systems (CW), Alexandra Way, Ashchurch Industrial Estate, Tewkesbury, Gloucestershire GL20 8NF. Telephone 298690 (STD 0684) Telex 437239.

Total control for smaller networks

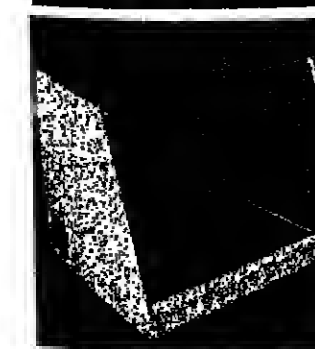
A POWERFUL new system that brings total data communications network control, management and trouble shooting within reach of users of smaller networks is announced by Racal-Milgo.

The CMS Series 2 is a compact complement to the large network CMS launched two years ago by Racal-Milgo. Exploiting the advanced technology of its larger counterparts, it brings the benefits of management control within the reach of networks funded by modest budgets, says Racal-Milgo.

Based on a powerful micro-computer and using advanced software, CMS Series 2 can monitor an entire data communications network from any point around the world. All management functions are performed on a dedicated second channel independent of the main data flow.

Using CMS Series 2, the operator can detect network faults in seconds. The system instantly alerts him that something has failed, then allows him through the colour graphics display to zoom in on the fault, identify it, and reconfigure the network to restore data flow.

Racal-Milgo (CW), Richmond Court, 309 Fleet Road, Fleet, Hants.



Power Equipment's Model DEV 699 acoustic cabinet.

Printer noise reduced

DESIGNED to reduce word processing printer noise by up to 85%, a new noise-absorbing cabinet from Power Equipment can be used with many of the popular daisy wheel RO (receive only) printers with twin sheet feeders.

Applications for the new Power Equipment Model DEV 699, include the Rank Xerox 840, 850 and 860 printers, Ditho 630 and Quine 7-10 range.

Printer noise is reduced, on average, by 12-15 decibels which means the machines are 75% quieter in normal office environments, say the makers.

The Power Equipment Company (CW), Kingsbury Works, Kingsbury Road, London NW9 8UJ. Tel: 01-205 0039.

COMPEC NORTH '82

Belle Vue, Manchester

June 22-24, 1982

Tuesday: 10.00-18.00

Wednesday: 10.00-18.00

Thursday: 10.00-16.30

The most comprehensive computer exhibition in the north is on again soon in Manchester.

For computer users, suppliers, systems and software houses, consultants - anyone who is professionally involved with computers - this is the ideal opportunity to see and compare the whole range of equipment and services.

A day at Compec North is the most effective way of bringing yourself up to date in today's computer market.

MAKE A NOTE TO VISIT
Admission is by business registration and costs £2 at the door, OR
SAVE TIME AND MONEY
by sending now for FREE advance tickets.

COMPEC NORTH is a Computer Weekly exhibition. Organised by IPC Exhibitions Ltd.

COMPEC NORTH '82

Please send..... FREE advance registration tickets.

Compec North '82 tickets. IPC Exhibitions Ltd, Surrey House, 1 Threlway Way, Sutton, Surrey SM1 4QQ.

NAME
COMPANY
ADDRESS

(Applications not accepted after June 14. No school parties or children under 16.)

Handwritten signature: J. H. 130

Appointments

OVER 100,000 COPIES EVERY WEEK

Appointments

ComputerWeekly

CLASSIFIED DEPARTMENT,
QUADRANT HOUSE,
THE QUADRANT,
SUTTON,
SURREY SM2 6AS.
Box Numbers: Should be addressed
to the box number in the
advertisement in Computer Weekly
at the above address.
Classified Rates: £27 per sec
10 x 3 cols = £1,170
30 x 3 cols = £1,983
Half Page (18 x 7 cols) = £2,079
100 x 4 cols = £2,423
Full Page (30 x 7 cols) = £3,900
Copy Deadline: 3.30 p.m. Monday
prior Thursday publication date.
Complete artwork up to 11 a.m.
Tuesday.
Advanced space reservation is
available.

LONDON 01-261 0171 (10 lines)
CONSULTANCIES SALES
Assistant Classified Manager
Chris Prior
Sales Executive
Julia Harwood
Melanie Lindeman
DIRECT CLIENT SALES
Telephone Manager
Shobhan Geller
Senior Sales Executive
Neil McDowell
Trevor Beckett
MANCHESTER/BLISSDALE
Owen Kelly 061-972 8861
BIRMINGHAM/BRISTOL
Vic Sherat 021-358 4638
Classified Production
Steve Laver 01-261 3104

ON THE HORIZON

A DP Development to meet the needs of the 1990's

The NLA Tower in Croydon, the image in our brochures, is the home of Hill Samuel Life Assurance (HSLA), a member of the famous Hill Samuel Group (merchant banking, insurance, pensions, shipping). HSLA is about to expand its computing power significantly, to cater for the corporate systems needs into the 1990's. A whole new range of systems is to be developed for users, both directly by the systems and programming group and by the application of user tools, such as APL, report generators etc. Hardware will be dramatically increased (a triple processor installation, two IBM 4341's and a 4331, and the plans to house it focus upon a dramatic new underground, ultra-modern computer building. The new development program needs considerable expansion of people resources. In both Systems Development and Production Services, and HSLA will be expanding its DP department by over 60% in the next year. This has to be one of the major new computer systems developments South of the Thames, commenced within the last twelve months. On the horizon is a great job opportunity with technical and development interest for years to come - here today is the entry point for you to join the team.

PROJECT MANAGER

C.£16,000 + Benefits

The Project Manager is responsible to the Systems Manager for projects in the conventional policy servicing and accounting area, which together with the unit linked and sales support teams service the users systems needs. Each team contains about twelve staff.

The Project Manager must be capable of managing several projects at once, with good people management and motivation skills. Experience should include a proven record of success in project management and control. Previous background must include systems analysis and design and programming. Application experience should include working in the policy servicing field for a life assurance company.

Awareness is needed - of the aims of senior management and of the problems of users at all levels and technical DP people within the team. Communication, motivation and achievement within the company systems plan must be the aim.

All positions enjoy the HSLA benefits package:

- * Productivity Bonus * Mortgage subsidy scheme.
- * Non-Contributory pension * Luncheon Vouchers
- * Minimum 4 Weeks holiday * Family BUPA
- * Flexitime * Interest Free or low interest loans.

For further information please telephone (24 hour answering service) or write quoting ref: CW12-2J. All positions are open to both men and women.

CAPP ASSOCIATES
01-686 9693

Capp House, 96d South End,
Croydon CR9 3SD.

International & UK Recruitment Consultants

PROJECT LEADER

C.£13,000 + Benefits

A key position leading a group within the project team, with the main day to day responsibility for the development of a project to time and within budget. The Project Leader will be expected to have sufficient experience to define timescales, in both the systems and programming areas. There will be a great deal of user contact at all stages of development of the project. The project team will need management, both personal and technical. The Project Leader's background must include working in a large mainframe environment and significant analysis and programming experience on complex systems.

SYSTEMS ANALYSTS

C.£10,000 + Benefits

The bridge between the business requirements of the user and technical definition for the programmers. An analyst must have the personality and ability to work closely with users and with all levels of technical colleagues. Background must include the successful implementation of at least one system (or major subsystem) and a programming background.

LEAD PROGRAMMERS

C.£12,000 + Benefits

The major programming role within the team - technically advisory, capable of complex programming, with the ability to define and meet targets of time, both elapsed and budgeted. A significant programming background in COBOL. In an IBM OS/VS or MVS environment is required. Ideally also 4300 series experience with DOS/VSE and CICS. The Lead Programmer must have the personality to lead, train and encourage other programmers to success.

PRODUCTION CONTROL MANAGER

C.£13,000 + Benefits

A crucial position in the daily running of the computer installation. The computer operating and off-line services section report into this management level, with a staff of six. The Production Control Section responsible for the operational analysis, installation, production maintenance, scheduling, media control and back-up and recovery of application systems, also rests with this job, with a staff of five.

Relevant experience is critical, dealing with both users (at all levels including Director) and managing computer operations staff. Technical experience must include operations analysis, writing of MVS/JCL or good understanding of VSAM and preferably experience of VM/CMS. This position reports to the Production Services Manager.

SENIOR PRODUCTION CONTROLLER

C.£8,500 + Benefits

The main area of responsibility is application systems - installation, production maintenance, investigation and correction of failures and the provision of accurate documentation. Experience must include liaison with users (including systems development), creating and maintaining VSAM files, OS/JCL writing and operating. Operations analysis experience is an additional bonus. This position reports to the Production Control Manager.

SENIOR OPERATIONS CONTROLLER

C.£8,500 + Benefits

To assist in the investigation and selection of user tools, especially in the package area. Other responsibilities include installing and maintaining VM and looking after hardware, both at installation and fault finding levels and in planning for future need.

Experience should include dealing with all levels of user, creating and maintaining VSAM files; VM/CMS operations and at least four years in operations (preferably DOS) and of JCL writing. This position reports to the Computer Facilities Manager.

CONCENTRATE on SYSTEMS ANALYSIS in Cambridgeshire

Are you troubled by the pace of life - the turmoil and hubbub of modern living? If you have difficulty in concentrating and can't relax..... Our client, a well-established and highly successful business, who's manufacturing function 'ENVELOPS' a considerable share of the UK market, now part of the Reed Group, still retains its essential family atmosphere. The Environment, situated on the original farm which has been carefully preserved. The company's keen commitment to EDP together with the relaxed working environment stimulate total dedication. The Requirement. If you can offer strong systems analysis experience in a manufacturing environment gained on DEC hardware and previous programming experience in BASIC+2 with RMS 11 file management system - then our Client can offer you: The Opportunity to liaise closely with the user departments at the Regional Development Centre throughout the county and provide the necessary Interface between them and the Software Development team. You will be involved with development of new manufacturing systems. Initially preparing the requirement documentation and checking that the submitted specifications accord with these requirements. You will report directly to the Systems Manager. The Package. If you are willing to relocate to rural Cambridgeshire, our Client can offer a very generous and comprehensive package for assistance to include: ALL legal fees and expenses PLUS a disturbance allowance for Incidentals PLUS annual salary circa £11K

For more information on this substantial career move - contact PETER JEZEPH on CAMBERLEY 64252 or write enclosing a detailed C.V.

TRIDENT COMPUTER SERVICES, PLC
THE PARADE, HIGH STREET,
FRIMLEY, CAMBERLEY, SURREY.

TEL: CAMBERLEY (0276) 64252

Mon.-Fri. 9 a.m.-5.30 p.m. Sat. 9 a.m.-1 p.m.

TRIDENT ARE LICENSED BY THE DEPARTMENT OF EMPLOYMENT AS AN
EMPLOYMENT AGENCY AND EMPLOYMENT BUSINESS.
LICENCE NUMBER: SE101400 (0540)

Sales Executives

Currently Earning
£14,000 - £25,000

Michael Linford Associates wish to hear from
Senior Sales Executives and Sales Managers
whose track record to date has demonstrated
superior ability.

We are an established consultancy who specialise in
the search and selection of sales and marketing
executives for the computer industry.

Perhaps your current appointment is fulfilling your
career needs, but nevertheless, you are interested in
future opportunities, alternatively, you may be actively
seeking a new appointment now.

You may be looking for:

- ★ A higher income
- ★ A more sophisticated product
- ★ A totally professional peer group
- ★ A more authoritative role

Or, more likely, a combination of all these factors, then
perhaps its time you spoke to us, Bear in mind, the best
position for you may never be advertised.

In the first instance, telephone Mike Linford on:
01-370 2012/2013. Or send a brief CV for his
attention to the address below. Any approach will be
treated in the strictest confidence.

ML Michael Linford
Associates Ltd.

Executive Search Consultants
150A Gloucester Road, London SW7 2JF. Tel: 01-370 2012, 2013.

myriad MARINE SURVEY Senior Programmer

Attractive Kent/
London Border

£9,000-
£11,000

This is a superb opportunity for an experienced Programmer eager to join a company leading the market in geophysical exploration techniques.

Suitable candidates will possess at least three years' DP experience preferably gained within a technical environment, together with one or more of the following:

- ★ Minimum of one year's HP 1000 experience
- ★ FORTRAN and/or ASSEMBLER languages
- ★ Numerate degree or equivalent qualification

The successful applicant will join a small team of specialists involved in the development of marine systems and the interpretation of data collection from ships based around the world. The position requires the ability to work independently, and offers the opportunity of international travel.

The company offers an excellent starting salary together with other attractive benefits including subsidised restaurant, sports facilities and comprehensive relocation package where appropriate.

Please apply to our London Office on 01-353 0981.

Ref: SE1/1305

Myriad Appointments Limited

30 Fleet Street, London EC4A 3DF. Tel: 01-353 0981 24 hours
5th London Street, Reading, Berks RG1 4SQ. Tel: Reading (0734) 515002 24 hours

(0540)

ANALYST/PROGS PROGRAMMERS

IBM DOS/VSE COBOL
C. LONDON to £12,500

Our client an international bank with offices throughout Europe and America seeks to recruit Analyst/Progs and Programmers, due to expansion with their development projects group.

We have been retained to engage Analyst Programmers to work in small project teams writing and testing COBOL CICS and DL/I programmes. To advise on design and programming aspects - a troubleshooting role. The Programmers will work on a variety of banking projects and be involved in the development of new real-time systems.

Company retains IBM 4300 machines running under DOS/VSE using Cobol, TP and Database. For the Analyst/Programming position applicants require a minimum of 2½ yrs IBM Cobol. Programmers need 18 months IBM Cobol and both these need some exposure to CICS and DL/I. TRAINING will be offered where necessary.

Candidates should show intelligence, motivation and be "user-friendly". Excellent benefits include Subsidised Mortgage, Non-contributory Pension Scheme, Flexi hours & Free Lunch and Relaxation.

REF S6106

Datascene
International
Limited
Scapellato House 169/173 Regent Street London W1R 7PB. Tel: 25851

datascene

01-439 7871

24 hour answering phone

01-439 7871

01-439 7871

01-439 7871

Raytheon International Data Systems is the computer division of Raytheon Worldwide Company, a successful company with over 75,000 employees. In our Amsterdam office we develop and support airline terminals, and special mini-computer applications. Due to increased customer demand we need a

PROGRAMMER— MICRO- PROCESSOR SYSTEMS

who will be heavily involved in detailed design and development of microprocessor based terminal control software.

We are looking for someone who has knowledge of microprocessor development systems, communications protocol handling, and microprocessor hardware (e.g. 8085, 86000). Languages used: assembler, PLM and C.

A degree level in computer science would be a good starting qualification. To "fit the team" the preferable age would be around 25 years.

Raytheon offers competitive conditions, a challenging professional environment, and international opportunities.

Please send your resume to Raytheon International Data Systems, Joan Muyskenweg 22, 1098 CJ Amsterdam, the Netherlands, attn: Personnel Department, reference 82-8.

RAYTHEON

RAYTHEON INTERNATIONAL
DATA SYSTEMS COMPANY

DIVISION OF RAYTHEON WORLDWIDE COMPANY

System Support Engineer

London + UK travel £9K+Car++
Word Processors & Local Area Networks (Rings)
A major designer and manufacturer of these systems is expanding its service network and requires an Engineer to provide customer service and sales support. Experience and success in the maintenance and support of similar microprocessor products in London is important.

Programmer/Team Leader

Maidenhead £9K+
Commercial system designers
My client, a successful consultancy, requires SENIOR PROGRAMMERS with a good academic and commercial background and with experience of designing systems for mini/micro computers using COBOL and/or BASIC.

Design Engineers

Surrey £8 to £12K+
Microprocessor Projects
My client is the successful designer/manufacturer of a range of micro-computers and is expanding its design team to work on the next generation of business systems. He needs a SENIOR DESIGNER and a PROJECT LEADER with 16 bit chip family experience and the appropriate high and low level software knowledge, and a good theoretical background.

ADVANCE NOTICE

D.P. Programmers/Sys. Analysts

Saudi Arabia £2 Max Package
Big new IBM installation
An associate company has won the contract to provide the staff for a new Petrochemical complex. I will shortly be looking for suitably experienced people who want to work in the USA for a year before relocating to Saudi for a further two year renewable contract.

COBOL, CICS, IMS, OS/VS1, VM/CMS, VM/370 are all relevant. IF YOU FEEL YOU MATCH ANY OF THE ABOVE REQUIREMENTS please write to me, Gilbert van Sonneren with CV or phone me at any time Monday to Friday for more information, or an Application Form.

Recruitment Consultants
Electronics and Computing Specialists
International Business Centre
1 Mortimer Street, London W1N 7RN
Telephone: 01-637 5277
After Hours Recruitment (01-637 5277) 24 hours

COMPUTER SYSTEM ENGINEERS

We have vacancies for experienced engineers for work on IBM 370 series equipment in the South Cambridgeshire/Essex area.

We offer a competitive salary, company car, bonus and pension scheme.

If you wish to take advantage of this opportunity to advance your career with the United Kingdom's largest independent computer maintenance company, please contact:

Mr A. Mackereth
Area Service Manager
Computer Field Maintenance Ltd
Ground Floor
Graphics house
Ferrars Road
Huntingdon
Cambs.

CFM
A Member of the IAL Group

Tel. 0480 50546

8520

COMPUTING SERVICES COMPUTER APPLICATIONS PROGRAMMER

Mott Hay and Anderson are International consulting engineers with a very wide practice in civil and associated mechanical and electrical engineering. We are expanding our computer operations to cover a wide range of activities.

We require a Fortran Applications Programmer to undertake the development of software and associated documentation in a wide range of engineering and administrative applications. The successful candidate would join a group responsible for computing services for the company and for outside clients.

The applicant should have a minimum of two years' experience in Fortran programming and would be expected to show initiative and drive. The firm's computing facilities include a DEC VAX 11/780 computer, computer-aided draughting and word processing systems. Please reply in writing giving brief details, quoting reference no. 228 to:

Associate For Personnel
Mott Hay and Anderson Holdings Ltd
20/28 Wollaton Road
Croydon CR9 2UL

8523

Mott, Hay & Anderson
International Consulting Engineers

IMS — MTO

Urgently required for prestigious company

**CONTRACT AND PERM
£ EXCELLENT + BENEFITS**

REF: W1286



01-636 7584
(EMP. AGY)

Royal Marsden Hospital
Fulham Road, London SW3

Computer User Liaison Officer

Salary scale £4,27,616-£9,079 inclusive
The Royal Marsden Hospital is implementing an extensive computer system to benefit both service and research. Currently, some 30 terminals are supported, but this number is expected to increase to approximately 80 over the next two years. A User Liaison Officer is required who will provide on-going instruction and advice to the users of computer terminals and aid the smooth implementation of applications such as out-patient appointments. Training will be given to the successful applicant, who should have at least five years' experience in a hospital situation, an interest in computer systems and some experience with the use of computer terminals. For an application form and job description, please contact the Personnel Department, Tel: 01-352 8171 ext 448. Closing date: 28th May 1982.

8524

UNIX Systems

Monotype International is a world-wide group of companies providing a complete systems approach to the Printing and Graphic Arts industry.

Our development group is based in Cambridge. You will be working with one of our Project Teams to design and implement innovative products for the printing industry, based around modified XENIX operating systems.

Software Engineer c£8,000

You will be able to demonstrate a professional approach to software development as well as having considerable practical experience of the C Programming Language.

Systems Engineer c£10,000

You will be able to demonstrate a record of past achievement and should have a knowledge of UNIX/XENIX kernel programming. Familiarity with PDP 11 hardware would be an advantage.

Along with the generous salary you will enjoy a benefits package which includes 25 days holiday, contributory pension scheme and assistance with relocation where appropriate.

Write or telephone:
The Technical Manager,
Monotype International,
Advance Development Group,
Science Park, Milton Road, Cambridge.
Telephone: Cambridge 64018.

Monotype
International

8525

SCOTTISH EXAMINATION BOARD DALKEITH, MIDLOTHIAN

SYSTEMS ANALYST AND PROGRAMMER POSTS

Salary scales £9999-£10941 and
£6698-£7371 respectively

These are permanent staff posts. Systems Analyst applicants should have experience in analysing proposals, designing systems and preparing programmer specifications for Cobol and Fortran. Programmer applicants should have several years' experience of IBM Cobol and Fortran and previous operating experience would be of interest because assistance with two-shift operating will be required between March and June each year. For both posts knowledge of IBM computers, VM/CMS and JCL would be of particular advantage.

Conditions of service will be generally those of the Local Government Service. Application forms from Establishment Officer, Scottish Examination Board, Ironmills Road, Dalkeith, Midlothian EH22 1LE. (Tel 031-683 6801) to be returned by June 4, 1982.

8526

SALES EXECUTIVES

VIDEO TERMINALS

£15,000 plus
on offer
with car

INTELLIGENT TERMINALS

VACANCIES IN: LONDON AREA; NORTH WEST AREA

Interesting new product line including Colour graphics, DEC DG and IBM emulations.

Experienced video terminal sales executives can expect to earn in excess of £16,000 in first year. Guaranteed for first three months.

Please contact in confidence, BILL SMITH on 228 288181.

Woodgate Road, East Bergholt, Colchester, Essex.

mellordata

myriad

Surrey/Berks
Border

PDP-11
Viewdata

Software development

Good educational background plus at least three years' Assembler programming and some knowledge of communications, preferably X25/PSS, etc.

Service Engineers

also required, with a knowledge of the PDP-11 Architecture and Diagnostic Structure, and some appreciation of Data Communications.

To discuss these opportunities in confidence and arrange an early interview, please contact Myriad at Reading. Ref: RT1/1305

Myriad Appointments Limited

30 Fleet Street, London EC4Y 1AA Telephone: 01-353 0981 24 hours
50a London Street, Reading, Berkshire RG1 4SQ Telephone: Reading (0734) 585802 24 hours

19211

myriad

Internal Consultancy

PDP 11/70

BASIC +

RSTS/E

The data processing group of a multi-national, British organisation also functions as a consultancy for the UK subsidiaries and two additional staff are now required to strengthen the team. The Company is well-established with interests in many different countries contributing to an annual turnover of approximately £250 million.

Programmer

c. £9,000

Bletchley/City

To be primarily responsible for a major subsidiary, this person will require strong interpersonal skills as they will act as a link between London and the users in Bletchley. Applicants should have a sound knowledge of BASIC+ or BASIC+2 and be able to operate effectively under minimum supervision.

Both of these positions involve a large proportion of development projects using on-line software and DP staff are encouraged to expand their career potential and promote their services within the organisation. Employee benefits include a pension scheme with free life assurance, subsidised meals, an interest-free season ticket loan and two reviews per year.

For further information regarding these opportunities, contact our London office (01-353 0981) quoting reference S1/1305.

Myriad Appointments Limited

30 Fleet Street, London EC4Y 1AA Telephone: 01-353 0981 24 hours
50a London Street, Reading, Berkshire RG1 4SQ Telephone: Reading (0734) 585802 24 hours

19211

High Salaries
Excellent Fringe
Benefits

Video Response
X25/PSS

Hardware Engineers

At least 18 months' in hardware development. Knowledge of Data Communications, Telephony, Micro-processors or VLSI would be of interest.

Applications/Consultancy
Support

... various levels required
between 18 months' and six years' experience, including Assembler programming.

SYSTEMS PROGRAMMER HELP KEEP THE WHEELS TURNING

c £10,500

Fiat Auto (U.K.) Ltd. is one of the country's leading vehicle importers, with a wide and successful product range.

We are now at an exciting stage in our development, with opportunities for the right person to build on his or her systems programming skills in a small but lively technical support group.

Our new purpose-built Data Centre is based at Alorton in West London. We have an IBM 4341 using VM/CMS, DOS/VSE2, CICS, DL/I, VSAM, CICS/MM and Keymaster, supporting an expanding TP and RJE network. Planned enhancements include VM/SP, VM Passthru and APL.

We don't employ our systems programmers solely to install and maintain our system software - we believe in using their skills to develop additional software tools to aid our programmers, systems designers and operations staff.

FIAT LANCIA



CHOICE OF COMPANY CAR

If you have a good knowledge of IBM Assembler, 2 to 3 years in systems programming and experience of some or all of our software (an operations background is also a plus), then you could well be the person we need.

As a large and progressive company we offer benefits to match. These include an extremely attractive car scheme which gives you the choice of any Fiat or Lancia car in our comprehensive range.

For additional details please telephone Sue Ashby and Anne Betts on 01-863 6775 (daytime) or 0844 53531 (evenings and weekends).

Computer Personnel International

THE SPECIALIST RECRUITMENT SERVICE DIVISION OF COMPUTER SYSTEMS INTERNATIONAL

30-32 Southampton Street, London WC2. 01-836 6775



ANALYST/PROGS PROGRAMMERS

IBM RPG III OR II
SURREY £8-£18,000

Our client is based in North Surrey conveniently located for applicants who live in South London or Surrey. They are an internationally known software house who currently require Consultants, Analyst Programmers and Programmers to be office based in the main but occasionally at clients' premises.

Being a software house the work involved will be varied but in the main will revolve around IBM SYSTEM 34 and SYSTEM 38 hardware, full training in RPGIII will be given to RPGIII Programmers. Application areas include Manufacturing, Process Control, Accounting, Insurance and Banking.

Ideally you will have upwards of two years' experience on IBM GSD hardware and be competent within the range of your current job title. You will also be career minded. These positions offer excellent career possibilities.

Applicants should apply in the first instances to Datascene Quoting Ref M.5926.

Datascene
International
Limited
Sceptre House 169/173 Regent Street London W1R 7FB. Telex: 25851.

datascene

01-439 7871
24 hour answer phone
London & Brussels
Sceptre House 169/173 Regent Street London W1R 7FB. Telex: 25851.

New Challenging Opportunities

Saudi Arabia
£14K-£18.5K and long term prospects
Senior Systems Analysts

with 5 years relevant experience as principal designer/project leader for commercial database data communications systems.

Programmer Analysts

- (a) 3-5 years experience in systems analysis, programming, implementation of systems 34 RPG in communications environment.
- (b) 3 years experience commercial applications, medium size mainframes, database design, on-line systems.

Programmers

with minimum 2 years experience in Cobol on-line database systems. Experience with NCR VTX-TOTAL-TRAN-PRO-OLPD a plus but not essential.

These opportunities provide attractive salaries, free housing, tax exclusions, generous leave allowances and free medical care. All positions offer long term career prospects and are initially on bachelor status. Married appointees will receive a marital separation allowance.

Interested applicants should forward resume to Mr M.J. Piper quoting ref no 5081. A covering letter should indicate any organisation from whom it must be withheld.

Coplan

Recruitment Consultants

21-23 POLAND STREET LONDON W1P 4LP

Logitix

Logitix Recruitment Limited
10 Grenville Place, London SW7 4RW

Telephone 01-373 3063

Systems Consultants

Inner/Greater London: Salary to £16k

A market leader in the areas of office automation systems, information science technology and data communications requires a number of additional Senior Systems Consultants for its London based operations. All respondents, aged 28-35 years, should hold at least one numerate degree. It is essential to offer a minimum of five years' experience of systems design, consultancy and project leadership gained with either a major manufacturer or a total systems supplier. Candidates are expected to be fully au fait with technological market trends, particularly Local and Wide Area Networks, Videotex (Prestel/Viewdata) applications and more generally have a thorough understanding of distributed processing techniques. Of special interest will be those candidates who have already managed at least one major project from feasibility to final acceptance. For certain positions you will be required to undertake both national and international travel. Ref: L/19/A

Hardware Q.A.

Cambridgeshire: Salary to £12k

A leading supplier of Hardware and Software Products has an immediate requirement for a Hardware Quality Control Manager. The Company's rapid expansion programme has created this new position. Suitable candidates will be expected to have wide range of products and services, you will be required to travel extensively both nationally and internationally. Ref: L/19/B

Real-Time Applications

London/EEC: Salaries to £14k

A highly successful British Systems and Software House has outstanding opportunities for real-time software experts from Programmer to Team leader Level. Applicants should offer at least two years' real-time programming experience in either FORTRAN, PASCAL, MACRO II or Assembler. Particular hardware is not important, but you will be expected to have had exposure to a leading mini- or micro-computer. Application areas of interest are: Data Communications and Networks, Message/Packet Switching, Process Control or Defence. Candidates who demonstrate management potential will, of course, be considered for the more senior positions. Ref: L/19/C

X25 Designers

N.W. England/U.S.: Pkg. to £15k

One of the world's leading suppliers of communications equipment has an urgent requirement for a number of X25 specialists. It is essential that all applicants are familiar with the physical data link and network layers of X25 and have worked in a communications environment for at least four years. Of special interest to our clients will be those respondents who are also able to offer knowledge of a major communications structure such as SNA or DVA. Initial product training will be undertaken at the Company's North American headquarters for a period of approximately 6 months and, subsequently, successful candidates will be located in either North West England or the South Coast. Ref: L/19/D

Robotic Systems

N. Home Counties: Salaries to £11k

A supplier of total systems in the field of industrial automation is currently recruiting Programmer/Designers with a combination of hardware and software skills for its electronics division. Of special interest will be applicants with experience of designing microprocessor based instrumentation systems from board level upwards. At least one degree in Computing Science or Electrical/Electronic Engineering is essential, as is 2-3 years in an industrial environment where the primary languages utilised. Working as members of multi-disciplinary teams, successful candidates will be involved in the design and development of micro-based complex machine control systems to meet individual customers' requirements. Ref: L/19/E

Macro-II Programmers

London & W. Home Counties: Salaries to £11k

A major British Systems and Software House is seeking a number of Macro II Programmers. Suitable applicants will be graduates with a minimum of two years' real-time programming experience on a PDP-11 configuration running under RSX 11M. Fluency in Macro II is, of course, essential, but applicants able to offer additional skills in Fortran or Pascal will be especially favoured. As many of our clients' projects are communications orientated it will be a distinct advantage to have a knowledge of protocoling techniques, with particular emphasis on exposure at either the systems or application levels to Deent. Ref: L/19/F

Graphics/CAD

Home Counties: Salaries to £11k

A market leader specialising in the production of computer systems for design applications is currently seeking additional Systems Programmers and Applications Support Consultants. Suitable applicants will be graduates, preferably with a degree in either Mechanical or Civil Engineering. Subsequent industrial experience should include at least one year's Fortran or Assembler programming experience in either a technical or scientific environment. In particular, knowledge of Finite Element Modelling, Numerical Control or Computerised Drafting Systems would be a distinct advantage. All positions will involve a degree of national and international travel and, in certain circumstances a company car will be provided. Ref: L/19/G

Industrial Control

Inner/Greater London: Salary to £15k

A London-based Total Systems Supplier has a number of vacancies for Applications Engineers and Project Leaders. For the more senior positions suitable candidates should already have had responsibility for systems hardware procurement, installation, commissioning and software package purchase. For the less senior positions, applicants must be fluent in either a high level language such as PASCAL or RPL/2 with some secondary knowledge of an Assembler. To all cases the relevant programming and systems expertise must have been acquired in a mini- or micro-computer environment. Candidates with either theoretical knowledge or practical experience to robotics and artificial intelligence techniques are especially favoured. Ref: L/19/H

UK & OVERSEAS VIA I.A.

Industrial Artists currently has a large selection of rewarding vacancies for DP professionals, both at home and abroad.

SYSTEMS ENGINEERS with microprocessor experience. Knowledge of UCSD or CP/M operating systems, with Pascal and Assembler. Data Communications experience would be an advantage.
Location: Austria and Germany Ref: 112/82

SYSTEMS PROGRAMMERS with minimum 2 years scientific, or process control, systems software design experience. Knowledge of digital techniques, communications protocols or microprocessors desired.
Location: South West England Ref: 212/82

ELECTRONICS ENGINEER also required for the above installation.
Ref: 312/82

SYSTEMS PROGRAMMER Univac 1100, Exec 8 + Data Communications.
Location: The Netherlands Ref: 412/82

SOFTWARE DESIGN ENGINEERS with minimum 3 years industrial or military software systems experience. Some hardware knowledge advantageous.
Location: U.K. and Overseas Ref: 512/82

TECHNICAL AUTHORS with experience in one or more of the following disciplines: digital techniques, microprocessors, telecommunications, message switching, quality assurance or electronics.
Location: U.K. and Overseas Ref: 612/82

We also have requirements for IBM or ICL Analysts and Programmers for a number of client projects.

Take this opportunity to discuss these and other requirements by phoning Mark Clifford or Edith Watson on (0452) 57141 (Day) or (0234) 46000 (Evenings to 9 pm) or write to:

Marketing and Recruitment Department
Industrial Artists Limited,
21 Bancroft, Hitchen, Hertfordshire, SG5 1JP

I.A. is a registered Employment Business licensed by O of E.



EXCELLENT CONTRACTING OPPORTUNITIES

Our immediate domestic and international consulting needs are detailed below. If you are of a professional disposition, skilled and dedicated, and wish to join our growing permanent or contract staff, please contact us in respect of these and future opportunities.

INTERNATIONAL

RPG11, S34	Programmers	New York
RPG111, S38		
RPG 11, S34	Analyst/Programmers	West Africa
Strong IMS/DB skills	DBA or Designer	Holland
IBM, OS, CICS	Systems programmer	Paris
RPG 111, S38	Analyst/Programmer	Brussels

UK

COBOL, IMS DB	Programmer/Analyst	Home Counties
Merk IV	Programmers	Home Counties
COBOL, Univac 1100	Team Leader, Programmers	Essex
COBOL, TSO/SPF, MVS	Programmer	London
COBOL, VSAM	Programmer	London
Burroughs 6800, COBOL	Analyst/Programmers, Programmers	Home Counties
IBM S38 or S34, MAAPICS	Analyst/Programmer	Middlesex
TASKMASTER	Systems Designer	Home Counties
Experience of Interactive systems	Analyst/Systems Designer	Aberdeen
Radion R850	Senior Analyst	Home Counties
DL/I, CICS, COBOL	All levels	Cambs, Aberdeen

For more information please contact:



Resources Department
TANGENT COMPUTER SERVICES
102/100 South Street
Romford
Essex
Tel: Romford (0708) 756201
(24 hour answering service)

COMPUTER PROFESSIONALS FOR THE CITY

★★★ IBM Assembler/Cobol Programmers ★★★ to £9,000

Our client, a leading city bureau has asked us to carry out an extensive search for three competent Assembler Programmers, preferably with some COBOL experience, to work on twin IBM 4341 machines running under DOS/VSE. A minimum of 18 months' experience is required.

The applications areas are financial with particular reference to investment accounting systems used by insurance companies, Banks, Pension Funds, etc. Training will be given in CICS although an existing knowledge of the concepts involved is desirable. Opportunities to progress into senior positions within this large, well-established company are on merit and there is ample scope for internal promotion.

Benefits include 5 weeks' holiday, good pension scheme, twice yearly salary reviews and a challenging working environment.

For additional details please telephone SUE ASHBY and ANNE BETTS on 01-836 6775 (daytime) or 0844 53531 (evenings).

Computer Personnel International

THE SPECIALIST RECRUITMENT SERVICE DIVISION OF COMPUTER SYSTEMS INTERNATIONAL
30-32 Southampton Street, London WC2. 01-836 6775



London c.£15,000

Computer Consultancy

Stoy-MLH is an international management consultancy firm based in London, and is part of Stoy Hayward & Co., Chartered Accountants. Its assignments range from the management of a company's financial and stock control systems and on mini or micro hardware and software.

Demand for our computer consultancy services, in particular, now requires that we increase the size of our computer specialist team.

Successful candidates will likely be in their early 30's and either qualified accountants or university graduates. They will be experienced in advising on the introduction of both software and hardware to a wide range of businesses, and able to advise from the feasibility stage through to implementation. Public speaking experience on the subject would be an advantage, as would experience of communications and networking.

Salary will be commensurate with experience and is competitive. There is a contributory pension scheme, and BUPA membership is offered to consultants and their families.

Letters of application will be treated in confidence and should be forwarded with C.V., salary progression and any other relevant information, to Mr G. Henderson, Managing Director, Stoy-MLH, 128 Baker Street, London W1M 1FH.



Management Consultants

UNIVERSITY COLLEGE LONDON FACULTY OF CLINICAL SCIENCES COMPUTER PROGRAMMER A/SYSTEMS ENGINEER

required for the computer group which provides the computing services for the Faculty. A responsible knowledge of hardware and some software experience sufficient for maintaining the following equipment will be expected. A Cambridge Ring computer, a PDP 11/34 with 70 K bytes of disc storage, running UNIX with a terminal calculator supporting a number of micro-processors. A POP 11/10 running RT 11 acting as an R.J.E. to the ULCC computing facilities. Opportunities exist for research and development in relation to the Local Area Network being developed on the Cambridge Ring.

Salary scale - £5,542 to £9,486 plus £1,035 London Weighting.

Apply to: Director of Personnel Officer (Technical Staff OPI), University College, London, Gower Street, London WC1E 6BT.

(1816)

INNER LONDON EDUCATION AUTHORITY GUTHRIE COLLEGE THE CUT LONDON SE1 6LE

LECTURER GRADE 1 IN COMPUTER STUDIES

A Lecturer Grade 1 is required for this newly created post. The successful applicant will join a young enthusiastic team developing the teaching of computer studies throughout the college. Candidates should have either a degree in an appropriate discipline or a qualification in Computing. Some industrial experience and/or a recognised teacher training qualification would be an additional advantage.

Salary scale: Lecturer Grade 1 on an 8-point scale within the range £5,034-£8,592 (plus £768 Inner London Allowance) starting points depend on qualification, training and experience.

Further details and application forms obtainable from the Senior Administrative Officer (PA) at the college (01-428 0551), returnable by May 28th, 1982.

(1849)

BOX NUMBERS

Box number replies should be addressed to:

Box Number

to Computer Weekly

Quadrant House

The Quadrant

Barton Surrey SM2 6AS

Local Area Network and Multifunction Workstation Software Designers

Xinnics, the British local area network manufacturer widely regarded as the world's most advanced office automation supplier, needs a number of software specialists to help develop the exciting Xibus/Xinet system in the realms of voice and video communications.

Communications Software Designer London £12,000-£20,000

This key position requires substantial real-time communications experience and involves local area network software design, real-time communications in the packet-switching environment, and resilient systems design.

Customer Support Specialists London £12,000-£18,000

Several experienced programmers/analysts are needed to work closely with users on the design and specification of new Xibus applications, particularly in the fields of interface development and inter-system communications.

Workstation Software Designer London £10,000-£15,000

A senior post, requiring experience of application design and implementation, together with a creative approach to user interface development.

Please write with C.V. to:

Ian Richardson, Technical Director
Xinnics Ltd
Dumbarton House, 68 Oxford Street, London W1N 9LA

XIONICS

Technical Support S/W

Manchester c. £12.5K + car
Yet more expansion for this remarkably successful company creates an opportunity to join their new Manchester office. You will need several years technical software experience to include: real time, data comms, and/or data base systems, or operating systems. Starting dates are linked to internal training schedules. You cannot fail to be impressed by this client.
Contact Terry Harvey

Programmers Micros/Comms

Berks. to £11,500
Our clients are seeking programmers to join in the development of their micro based, communications oriented systems. Graduate level candidates preferred although two to three years experience in Pascal, Assembler or Fortran would be of interest as would experience with CICS-COBOL, CP/M, Unix and DEC knowledge would also be attractive.
Contact Tim Bridges

IBM Progs. Dev/Support

Berks. to £11K + car
Our client is an international company leading the field in the supply of application packages to IBM mainframe users. Seasoned Cobol programmers are required to join the European Technical Support Team. You will work in both a development and support capacity. Very attractive working conditions and benefits are offered by this progressive worldwide company.
Contact Tim Bridges

50+ Vacancies Systems H'ses

H. Counties/Envope to £17,000 +
We only work for the best companies. Our clients have many varied projects in all parts of the U.K. and Europe. If your experience is in minis/micros with technical application or systems software you may not be realising your full potential. DEC PDP11/VAX, ARGUS 700, HLT 3000, Intel, Motorola, Texas, DEC LSI micros, CORAL, PASCAL, RT1/2, Assemblers etc. are of most interest.
Contact Terry Harvey

RPG Prog. System 38

London Base to £10K + car
Experienced System 38 or 38 RPG programmers are required to join a highly successful company developing and manufacturing comprehensive range of commercial packages for IBM (VSE) equipment. Marketing oriented and presentable candidates are ideally suited to these positions as extensive client contact will be required with the opportunity to develop support skills.
Contact Tim Bridges

Programmer Analyst

C. London to £11K
Our client is the Mini/micro Business Systems group within a large international financial organisation. An additional programmer/analyst is required to work on the development of packages for a range of equipment including PDP11, Wang 2200 and IBM 5120. Candidates must be degree level. COBOL, BASIC essential, DIBOL very useful. Attractive company benefits.
Contact Tim Bridges

S/W Engineer Micros

W. Herts. c. £10,500
This is an interesting and challenging opportunity for a technical programmer with an understanding of micro architecture to join a company which is in the forefront of micro applications in medical systems. A knowledge of Z80 assembler plus a high level language would be useful. There is potential for promotion to project leader in the near future.
Contact Terry Harvey

Project Manager

W. Middlesex to £13,000
The ideal candidate for this position will have a wide appreciation of micro computer applications in business and commerce, with a technical knowledge of, or experience in Local Area Networking. You will be capable of designing products which integrate components in a L.A.N. environment. You will have the skills to plan and control and will maintain technical awareness.
Contact Terry Harvey

Ass't Progs. IBM Sys. S/W

Berks. to £13,000
A leading international company supplying a wide range of IBM mainframe software products requires IBM assembler programmers. You will be expected to work in the design, development and support of new and existing products. You must demonstrate total commitment to this type of work. Further training on in-house equipment. Some travel to USA and Europe is possible.
Contact Tim Bridges

Open letter to technical and commercial job seekers at all levels:

We are here to help you. Our free service to you is advice and counsel in identifying the most suitable position for the development of your career. Our consultants have held senior positions in the computer industry. They have the experience to understand your needs. If we do not have the position you want, we are prepared to help you find it. Why not write this letter to talk over your ideas with us.

Write, or telephone us during office hours as below.
Any other time call Terry Harvey on: Gurni Misseton (02404) 4705, Tim Bridges on: The Lee (024 020) 502.
We are always ready to discuss these and many other interesting positions.

HR

H.R. Associates Limited

Executive, Computing and Technical Personnel Consultants
111 Whitehouse Farm, Amersham, Bucks HP6 5BQ Tel: 02403 28383
London office: Regent Street, W1

HR

Surrey County Council GUIDFORD COUNTY COLLEGE OF TECHNOLOGY COMPUTER UNIT

PROGRAMMER REQUIRED

for the College's Computer Unit to work in a variety of Languages, but mainly COBOL and BASIC on an ICL 2804 and various microcomputers.
Salary scale £5,801-£7,875 plus £237 Surrey Allowance
Further details and application form from The Vice Principal, Guildford County College of Technology, Stoke Park, Guildford, Surrey, GU1 1EZ on receipt of SAE. (Tel: Guildford 31251.)
Closing date: Friday, 28th May 1982

DURHAM CONSTABULARY

Applications (male or female) are invited for the following civilian post based at Force Headquarters, Durham:-
COMPUTER OFFICER
Salary £5,241 to £10,278 per annum
This is a new post responsible for the Computer Manager for the Police, developing, implementing and operation of multi-user computer systems using Perkin Elmer 3200 range mini computers.
Applicants should be educated to degree standard, and have sufficient experience to undertake this highly responsible and demanding post.
The Authority has a scheme for the payment of removal expenses in appropriate cases.
All appointments are subject to a satisfactory medical report and to the provisions of the Local Government Superannuation Acts.
Candidates, either directly or indirectly, will be interviewed.
Application form and further details obtainable from The Chief Constable, Durham Constabulary, Police Headquarters, Victoria Road, Durham, DH1 1TT (Tel: Durham 64928, Ext. 2811). Closing date 28th May, 1982.

MANCHESTER POLYTECHNIC Computing Services Unit PROGRAMMERS

The posts entail provision of support to academic staff, and writing programs in a range of languages. Applicants must have degree level qualifications and one year's employment as a programmer. The posts require experience in the use of Business Systems or CAL, Pascal or Algol and Solidity. Applicants should be available for full-time employment based on a PRIME B50 with 80 terminals has just been installed. A Union Membership Agreement is in operation under which new employees are required to join the recognised union. For further details and application form (returnable by 28 May 1982) send a self-addressed envelope marked 'REV 1' to: Secretary, Manchester Polytechnic, All Saints, Manchester M13 9PL.

For further information please telephone: David Shee
On 061-989 3678, or send C.V. to:
REVIN LTD
ROEBUCK LANE
SALE
MANCHESTER

TEESIDE POLYTECHNIC COMPUTER CENTRE

Teesside Polytechnic is the forefront of computing in education. The Computer Centre has a staff of 40 and operates a large VAX mainframe, a Prime computer and several microcomputer systems.

PROGRAMMER ANALYST/SENIOR PROGRAMMER ANALYST

To join the Applications team, responsible for supporting a wide range of languages and applications software for Polytechnic users. The post offers excellent opportunities for both technical and professional development.
Salary, according to qualifications and experience, will be on one of the following scales:
Programmer/Analyst: £5,852-£7,875 pa or Senior Programmer/Analyst: £8,100-£9,528 pa
Applications forms and further particulars are available from: The Personnel Section, Teesside Polytechnic, Borough Road, Middlesbrough, Cleveland TS1 1BA. Telephone: 0462 21121 Ext 4414.
Closing date for applications: Friday 28 May 1982

ANALYST/PROGRAMMER

SAPPA PLC, established poultry farmers, hatcherymen and egg wholesalers, has vacated a experienced Analyst/Programmer and a Junior Programmer with knowledge of C.C. Business Data under R.D.O.S.
The work will involve development and maintenance of software applications in the agricultural field. Salary will reflect experience. Please apply in writing, with C.V. to: G. J. Telling, Company Secretary, SAPPA PLC, 21 Northgate Street, Bury St. Edmunds IP33 1JA.

FOR CLASSIFIED ADVERTISING USE

DIRECT
LINE
01-661 0121

Systems Training

Do you realise that you have the flair?

You're the first person others go to when they need a lucid explanation of an advanced piece of technology, or practical advice in a hands-on situation; never happier than when you're passing on your knowledge.

And the post we want you to fill? Principal Lecturer with ICL, whose Systems Training function enables customers to make the most effective use of the whole ICL machine range, with applications in every area of manufacturing, commerce and central and local government.

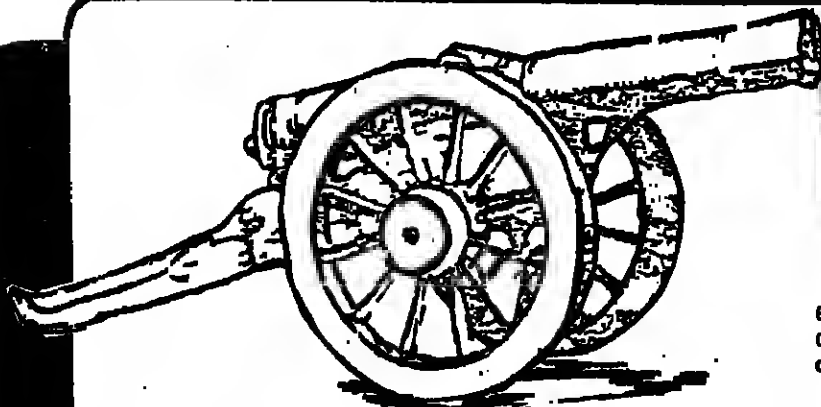
Any relevant lecturing experience would be useful, but is not essential because we can provide training in all the latest teaching techniques.

With us you'll be in your element based at Beaumont, our own college in Berkshire, and also visiting clients' locations in the UK and overseas as you hold on-site courses designed to meet individual requirements.

It's an exciting time to join us - we are at the forefront of new technology - as customers move to VME 2900 and networked systems - and your involvement will not only be in training but in the development of courses covering new areas of

ICL International Computers

Apply to Rev 1020



INVEST YOUR SKILLS IN CANNON ASSURANCE

a growing organisation (1981 NEW POLICIES up 74% over 1980 - SALESFORCE more than doubled 1981) committed to the advanced use of Data Processing Technology. In return they offer:-

- ★ immediate mortgage subsidies ★ easy access (Wembley Park tube)
- ★ twice yearly salary reviews ★ excellent training facilities
- ★ free life insurance ★ non-contributory pension scheme

IBM, 4341, 3370 and
60x3270 type terminals
DOS/VSE, PL1, Shadow
IBM Assembler, C.P.G.

ANALYST/ PROGRAMMER

package to:

£9,500

Cannon is seeking a capable PL/1 Programmer who has some analysis experience ideally gained in a commercial or financial environment. With an excess of 1 year's programming and analysis experience you could join this well-established organisation. If you have worked in a Life Assurance company then so much the better. The work is mainly development and Cannon pride themselves on keeping up to date with modern technology.

Please telephone: SUE ASHBY or ANNE BETTS 01-836 6775 (daytime), 0644 53531 (evenings)

Computer Personnel International

THE SPECIALIST RECRUITMENT SERVICE DIVISION OF COMPUTER SYSTEMS INTERNATIONAL
30-32 Southampton Street, London WC2. 01-836 6775



Sales Executives

SOUTH EAST
C £17,000 + 2.0 LITRE CAR
HIGH BASIC + G'TEE

Providing truly cost effective solutions requires a unique kind of follow through.

With computer-power, inconceivable 10 years ago-it has proved vital to have a marketing strategy which is sensitive to the needs of the end user and a programme of enhancement to suit their needs in the future.

The result is powerful but inherently flexible mini hardware, fully developed software and a support team both innovative and practical.

Combining these has accelerated the demand for the company's product and created opportunities for both the specialist and the generalist with either a commercial or technical/scientific background.

If you have a successful sales track record and the ability to manage and coordinate a high levels sales campaign, telephone: **Steven Knowles-Baker on 01-370 2012/2013** or send a brief C.V. for his attention to the address below. Any approach will be treated in the strictest confidence.



**Michael Linford
Associates Ltd.**

Executive Search Consultants
150A Gloucester Road, London SW7. Telephone: 01-370 2012/2013.

DATABASE ADMINISTRATOR

**Excellent Salary
& Benefits Package**
London
An opportunity within a leading international company here arisen for a database administrator. They operate a friendly, medium-sized environment utilising an IBM 4341 running under DOS and CICS. The successful candidate, who should have a minimum of 1 year's database experience, will help to support and develop DL/1 databases in addition to VSAM & DATADictionary involvement. In-depth training is available where necessary, although preference is given to those with existing DL/1 experience. The company offers an excellent salary and benefits package which includes three reviews per year, free lunches and relocation expenses. Ref: T1273

PROGRAMMERS

London Based **To £10,000**
A rapidly-expanding software house is looking to recruit several COBOL and RPG II programmers to work in and around the London area. These are excellent opportunities for career-minded professionals who have a minimum of 18 months' experience. Successful candidates will receive in-house training, top salaries and the chance to work with the latest hardware and software. Ref: W1274

ANALYST/PROGRAMMERS (SUPPORT)

Herts based - European travel **To £11,500 + car**
Our client, a leading manufacturer of minicomputer and intelligent terminal equipment, requires a number of analyst/programmers to provide client support across Europe. Candidates should have solid COBOL experience and previous involvement in a computer manufacturer/software house environment. Ref: W1297

Please, telephone for further details, or send your CV to the address below, quoting the appropriate reference number.



Computer Two Thousand Ltd
Data Processing Consultants
217-218 Tottenham Court Road
London W1P 9AF
Tel: 01-636 7584

Real Time Mini wants your experience

Particularly urgent needs at present are for Software Engineers with a minimum of 5 years' experience of radar systems, to join a London based software house but able to work in the Essex area.

Next plaintive pleas are for Software Consultants with telecommunications experience for U.K. and overseas positions. We are particularly interested in those experienced in communication protocols i.e. X.25.

From programmer to consultant level we have requirements for experience in the following applications:

Industrial Control - Communications (all manner of) - Military Systems - Simulation - C.A.D. Systems - Office Automation - etc.

Languages: High and low level.

Hardware: PDP11s - VAX - Hewlett Packard - Argus - DEC LSI - Intel - etc.

Locations are London and the Home Counties mostly, although if you have good Real Time mini or micro experience and are seeking a new position it's more than likely we'll be able to help, being the area in which we specialise.

Almost forgot, we have a client based in Surrey who are part of an international organisation specialising in tele-communications who are desperate for hardware design engineers with experience of digital design and communications, preferably experienced with Intel equipment although any other micro experience would suffice.

Salary levels start at about £8,000 and go up to £18,000 sometimes more depending on location.

Please telephone Beryl McLaren 24 hour service on 01-836 9719 or 01-836 9882, you'll get a personal reply, not a machine.



Computer Appointments

(Recruitment Consultants)
(Real Time Mini's Place)
Suite 41/42, 12-13 Henrietta Street
London WC2

Software Engineer Surrey

The most crucial part of seeking alternative employment to your present position is, as you have no doubt experienced, finding a post which offers not only immediate interest and stimulation, but also a challenging future career path with a company which is dedicated to growth through excellence.

Our client would appear to have all the right ingredients. A small company, but part of an international organisation, they produce computer systems for power generation and allied industries.

You will work in the enviable position of a mini and micro computer environment with DEC and Intel equipment, using high and low level languages.

We would like you to be educated to degree level or equivalent, preferably in electronics or a numerate subject, although lack of academic qualifications should not deter you from applying. A minimum of 3 years' solid industrial control and/or data acquisition experience is mandatory. If you also have experience of PDP/11s and RSX11 using MACRO and CORAL you will have a distinct advantage, although this is by no means essential.

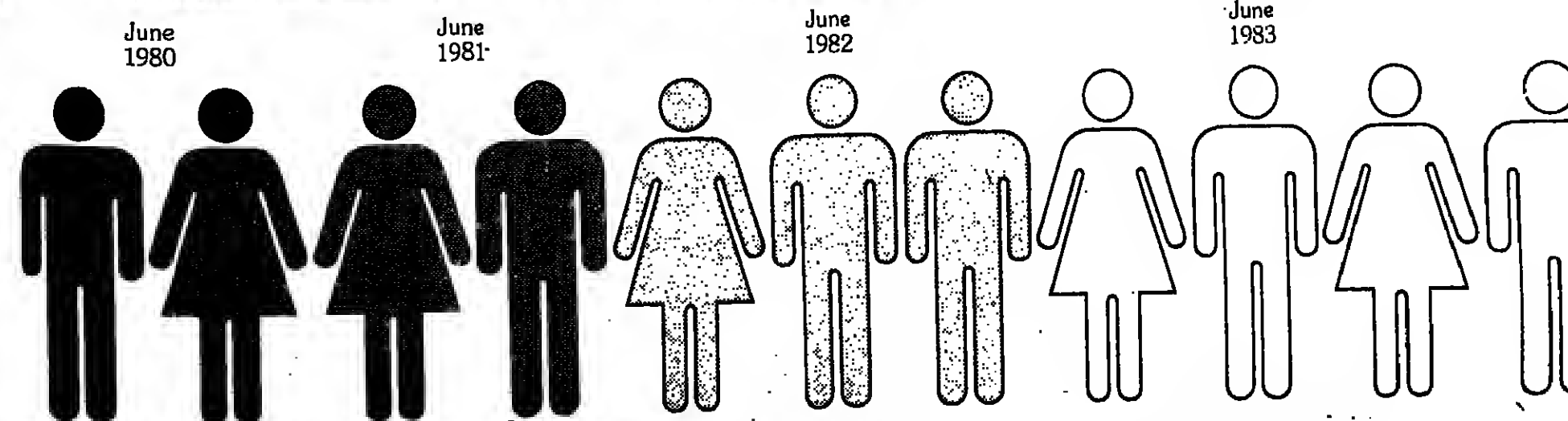
The salary is from £8,000 to £10,500, allowing for an engineer with slightly less experience to apply.

For further information please contact Beryl McLaren on 01-836 9719 or 01-836 9882 any time of day, night or week-end, you'll get a personal reply (not an ansaphone).



Computer Appointments

(Recruitment Consultants)
(Real Time Mini's Place)
Suite 41/42, 12-13 Henrietta Street
London WC2



1 Contractor
NO PERMANENT STAFF

24 Contractors
NO PERMANENT STAFF

30 Contractors
10 PERMANENT STAFF

30 Contractors
HOW MANY PERMANENT STAFF?

PROGRAMMERS AND PROGRAMMER/ANALYSTS

Join the Link Software House Expansion

We are a small, expanding Software House having no bias other than towards quality work with reputable clients. Our approach to staff will always be personal and friendly.

If you have a minimum of 3 years commercial IBM experience using COBOL or PL/1, ideally with Database or TP then you can be part of our expansion.

If you live within a 40-mile radius of Central London and are interested in earning up to £11,000 p.a. (reviewed six-monthly) plus benefits,

Please ring: Sheila Fox
Link Associates Limited
24a High Street, Chesham, Bucks. (0494) 784922



DALROTH computer personnel

GST COMPUTER SYSTEMS LIMITED Computer Aided Engineering Cambridge based

GST Computer Systems is looking for five staff to expand its professional services group working in the area of CAD, image processing and other CAE type applications. All positions require above average ability, a professional approach and a sense of humour. Remuneration includes a company car, profit sharing, other bonus incentives and fringe benefits.

Consultant/Project Leader

in excess of £12,500 + car

This appointment requires a solid background in the practical application of CAD systems and preferably an in depth knowledge of how these systems are built. Successful candidates are unlikely to have had less than 7 years experience and will have been involved in at least one major CAE project. The position involves feasibility studies and technical advice for clients and contributions to projects undertaken by the company. A university degree in engineering would be advantageous.

Systems Designer in excess of £10,500 + car

Candidates will have been involved in a major role in at least one development project for a CAD/CAE system and will have a strong Fortran background. The position involves design responsibility for projects undertaken on behalf of clients in advanced CAE application areas. Knowledge of PRIME, VAX or IBM systems would be preferred.

Programmers

in excess of £9,500 + car

Candidates will have had at least 2 years solid experience of Fortran program development in a scientific or engineering environment. Successful candidates will work on the development of advanced CAE software on a wide variety of projects. A university degree in engineering or computer science but with more limited experience will also be considered.

Applicants should be keen to tackle advanced technology projects, accept a high level of project responsibility and be prepared to travel on business.

For further information telephone Jenny Dalrymple-Hay or Ian Murray West on 01-493 2947 (day), or respectively Beaconsfield (04946) 4579, Milton Keynes (0908) 563415 (evenings/weekends) or write quoting Ref. 9905.

DALROTH & PARTNERS LTD, 4 HALF MOON STREET, LONDON W1

THE UNIVERSITY OF MANCHESTER Department of Computer Science RESEARCH FELLOW AND RESEARCH ASSISTANT

Applications are invited for two posts on a three year project commencing September 1982 to formally specify and develop an environment for rigorous software development.

The environment will be built on top of powerful personal workstations running the UNIX system. Applications for the senior post (salary range £5,700-£12,800 p.a.) should be post-graduate level or equivalent with at least five years' relevant research and/or industrial experience. For the junior post (salary range £3,250-£5,675 p.a.) preference will be given to holders of a good honours degree in computing science for research disciplines who have some experience with formal methods. Applications, with curriculum vitae and names of two referees, should be sent to Professor C. S. Jones and Mr. D. C. Brown, Department of Computer Science, The University, Manchester M13 9PL. Internal enquiries to Mr. D. C. Brown. Closing date for applications: June 11th.

(5391)

Analyst/Programmer

Vacancies £10,000 p.a.
IBM Systems 38 RPG III

Call ROS EAVIS
on 01-629 9883

Business People
Recruitment Consultants
(0563)

IMMEDIATE OPENINGS

HP3000 c£350
COBOL PROGRAMMERS for Central London

IBM 4341 c£500
DOS-VS/CICS Systems Programmers for Manchester Area.

IBM SYSTEM 34 c£400
RPGII Programmer/Analysts for Kingston Area.

IBM 370 c£300-375
ROSCOE Cobol Programmers and Analysts for Bucks and Herts.

ICL2900 c£300-375
VME/ROMS Cobol Programmers and Analysts for Bucks and Herts.

IBM 4341 DOS-VS/CICS - Permanent Positions c£12,000
- Cobol Senior Programmer/Designers for Central London.
- Cobol Programmer for Wiltshire Area c£10,000

For these and other positions please contact us:

Fissions Limited
138 Alexandra Road
London SW19 7JV
Tel: 01-894 2821

SYSTEMS ANALYST/ PROGRAMMER

BAHRAIN c£19,500pa tax-free

Cable and Wireless, the worldwide telecommunications Group, is expanding its Computer Services Department in Bahrain and requires a well qualified Systems Analyst/Programmer to head up the Systems Development team, reporting to the Computer Services Manager. You should have at least 7 years commercial experience, including several years programming preferably in an IBM DOS environment. You should also have a proven track record of successful system design and implementation. Experience of CICS is desirable. As the team expands, you will be expected to recruit and train national staff.

We offer you a two year contract with possible renewal by mutual agreement and benefits including:
* Rent free fully furnished accommodation.
* Free Company Medical Scheme.
* End of tour leave payment and terminal gratuity included in pay package.

For an application form please telephone or write to: Recruitment Manager, Ref: A988, Cable and Wireless PLC, Mercury House, Theobalds Road, London, WC1X 8RX. Tel: 01-242 4433 Ext: 4008.

Cable and Wireless
Helps the world communicate

GMWVC

**CAD - Marketing Manager
c £18,000 + car**

GMW Computers is the UK's leading company specialising in CAD systems in architecture, and related engineering.

Recent successes have enabled us to grow rapidly and we are now looking for someone to develop the new role of Marketing Manager within the company reporting to the Managing Director.

As part of the senior management team we are offering an expanding opportunity covering a wide range of marketing functions including market research, product planning, promotional events such as seminars, exhibitions, etc. and liaison with our advertising agency and technical media.

The successful applicant should have a sound business background and a proven track record in a similar role.

Remuneration is expected to be c£18,000 (plus car) commensurate with experience. Berkshire is situated in the Chilterns with good access to London and a wide range of schools and housing.

If you would like the opportunity of joining a growing company with a progressive outlook please write giving further details to:

GMWVC
John Dickett, Manager,
214/215, The
GMW Computer
Limited, 214/215,
Lower Ring Road,
Barnack, Cambs,
CB26 3RU.

THE ARCHITECTURAL COMPUTER SPECIALIST

KEY OPERATOR

He/She will be involved in the day-to-day operation of the KEINZLE 2000 and related activities. We are able to offer a realistic salary which is reviewed annually together with Luncheon Vouchers and a pleasant working environment. We are situated almost on the doorstep of Victoria Station.

Initial enquiries to Mr. M. Patel on 01-834 1321, Ext. 48.

Interviews will be held during the week ending 21st May.

ANALYST/PROGRAMMER WORKING c£9,000 HP 3000/III (Series 64) due July.

We require an additional person with on-line experience to join our team implementing the initial phase of an Order Processing System, using COBOL, IMAGE database and V.3000 forms handling on a Hewlett Packard 3000/III. The successful applicant must have been involved in at least one major on-line system and be prepared to contribute substantially to the design and development of future systems and, therefore, be able to communicate to all levels of management and user staff. Formal HP training will be given if necessary.

Telephone Roger Cheek
James Walker & Co. Ltd.
Linn Works, Maybury Hill,
Woking, Surrey GU24 0AF.
Telephone: Woking 881

Two easy sales executives

You won't be in the usual highly competitive, "hard-sell" situation with little else to offer except price. Because what we sell is unique.

We design and manufacture a range of terminals, controllers and software systems that no-one else can match.

We're not saying it's an easy life. Just a more interesting one, with new products and new projects coming up fast.

We are successful - one look at this mass of steel and concrete going up for our new Head Office at Henley-on-Thames will show you that we mean business.

If you can help get that business - and can prove it - ring David Miller or Ronnie Wilson.

It could be that the hardest thing you'll have to sell is yourself. But if you succeed, the rewards will be very worthwhile.

VIDEOM
Videocom Limited, Newtown Estate, Henley-on-Thames, Oxfordshire, RG9 1HG. Tel. 04912-76487

REAL-TIME SOFTWARE

BUSINESS & MILITARY INFORMATION SYSTEMS

To c£11,000 COVENTRY

Today's up-to-the-minute telecommunications industry provides a perfect illustration of the value of applied real-time computing techniques.

The linking of computers and telecommunications, in particular in the automated office and information systems environment is big business, with worldwide investment running into the hundreds of millions.

GEC Telecommunications Ltd is in the vanguard of development in the field supplying sophisticated equipment to telecommunications authorities, business and military users across the globe.

Currently we are looking for a number of talented real-time software engineers to reinforce the teams at our Coventry headquarters, working on these interesting projects from concept to final customer acceptance.

The people we're looking for will be graduates with at least three years proven success in the development of medium or large systems using a high level language. A willingness to take responsibility is essential, since you could well find yourself leading a team.

Salaries will be negotiable in the range to c£11,000. Plus other big-company benefits.

Interested? Then complete the coupon and supply c.v. if available to Mr. Z. K. Pizak, GEC Telecommunications Ltd, P.O. Box 63, Coventry CV5 1HJ.

Name _____
Address _____
Tel. No. _____
Experience _____

'MAY' BE FOR YOU!

SYSTEMS PROGRAMMERS

LONDON/SOUTHERN HOME COUNTIES c£9,000 to c£15,000

Presumably you do exist? If you have any in-depth experience of one of the following, we have a number of well-structured jobs to offer you a very good salary into your hands: COBOL, DOS, VS, VM, VME, IMS, CICS, PL/I, or PL/I. Trained Systems Programmers with an application programming background would also be very welcome. CW19/7 TRICA

C. LONDON
Here is an opportunity to join an IBM Banking installation situated in Central London. The applicant should have 1½ years' IBM COBOL and/or ASSEMBLER experience. There are tempting perks, including mortgage assistance, free BUPA and a bonus system. CW19/4 TRICA

SENIOR SYSTEMS ANALYST

To c£12,000
An insurance background is not essential but is certainly an advantage to join this ICL based organisation. A nice mortgage subsidy after a year is only one of the perks working for this company. They have excellent working conditions and the countryside around is superb. Of course the work itself is extremely rewarding and will do your career no end of good. CW19/6 TRICA

PROGRAMMER

c£9,000+

TECHNICAL PROGRAMMERS/MANAGERS

LONDON
An internationally famous Computer Manufacturer is developing a range of micro/minis to be compatible with their major range. The successful candidates should have high level language experience plus a systems design/software role in operating computers or data communications systems. They are also looking for two managers to control this development. CW19/2 MICHAEL

ANALYST PROGRAMMER

BERKS
We have a commercial company who require an experienced analyst/programmer with an ICL background for their support group. The first person could be a very good salary. If you have experience on this machine you are a more than likely candidate. Ring now for further details. CW19/6 TRICA

BANKING SYSTEMS ANALYST

To c£13,000 + Perks
A small bank based in the City with a SYSTEM 38 now requires someone with banking or similar background who would like to work in a small friendly team. RPS is not essential but would be useful as there is also an Analyst/Programming vacancy. CW19/7 TRICA

CONTRACT PEOPLE WANTED NOW!

IBM PL/1 ASS DOS/VSE
IBM PL/1 CICS TSO/SPF
IBM AS/400/4000
IBM SYS 34/39 II BANKING
ICL VME/ROMS COBOL
DEC T/34 BASIC + RATS
HP 3000 COBOL/PL/1

Programmer London
Programmer Middlesex
Prog/Analyst Western H.C.
Programmer C. London
Programmer S. London
Prog/Analyst Western H.C.
Programmer N & W London

Telephone Alan Smith 0951 4148 for information

UEA Recruitment Consultants
UNIVERSAL COMPUTER ASSOCIATES LIMITED, 2nd Floor, House 1, 100, Park Road, Norwich

MAJOR BRITISH MANUFACTURER SUCCESS STORY

With turnover approaching £18 million, this very successful mini computer and systems manufacturer, based in the Northern Home Counties is in a really expansive mood and requires more skilled personnel now. Relocation expenses will be provided to the successful candidates if required.

CUSTOMER SERVICE ENGINEERS

HOMER COUNTIES & SOUTH WEST ENGLAND
To c£9,500 + CAR
More alert, qualified people with maintenance/mini or peripheral experience to service the rapidly expanding customer base is now needed. A minimum of ONC + 2 years' experience is essential. Career prospects are excellent and salary is made up of standby and overtime allowances. CW19/6

SYSTEMS PROGRAMMERS

To c£10,500
More alert people are required to provide software technical skills in the area of data facilities/food facilities and computer systems. Salary level depends on experience. Successful candidates should have a background of implementing software that works and the ability to produce excellent documentation. CW19/6

(SENIOR) ANALYST PROGRAMMER

More alert people are required to design, develop, test, implement, maintain and support a large range of both commercial and government applications. The successful candidate will be in the forefront of technology and have a proven track record in the field. CW19/6

DEVELOPMENT OPPORTUNITIES

Central London,
Software House.

A large international UK based software house is seeking experienced programmers and systems designers for a major new commercial application involving ON-LINE and DATABASE skills. You should be flexible in your approach to the hardware and software on which you work. Initially, you will work on a Banking system on large HONEYWELL hardware and will move to other systems at the end of the project.

Career opportunities are excellent for persons of a good academic background. Considerable variety of hardware and applications may be worked on in future projects. Fringe benefits are good, as one would expect in a major and well-established software house. In addition there will be opportunities for work in Europe at the end of the project.

Team Leaders c £12,000

These are senior positions of considerable responsibility in our client's organisation. You should have proven design experience in a large machine environment in addition to at least one year's supervisory work. Any Banking or Honeywell experience would be a bonus.

Systems Designers c £10,000

Working on an interesting and demanding project you should be an experienced systems designer with a background including HONEYWELL L68/OPS able to carry out both systems design and program specification work for both batch and on-line programs. You should also have a solid COBOL programming background.

These opportunities truly offer considerable interest, large systems development and a very attractive and varied career.

Interested persons should telephone LEN CRAY on 01-439-8885 during office hours or talk with STEVE SYKES in our Leeds office on 0532-455911 or at home during evenings and weekends on 0532-882417.

LORIEN
COMPUTER SERVICES



Lorien Computer Services
Recruitment Consultants
OCS House, Servia Road
Leeds LS7 7NU
Tel Leeds (0532) 455911
24-hour telephone service

NEW 4331 INSTALLATION — D.P. MANAGER CIRCA £15K + CAR + BENEFITS

Our Client, a major car fleet management company, which is a subsidiary of a UK Finance Group, urgently require a Data Processing Manager for their new Data Centre based in London.

This appointment presents a rare opportunity to join a major company at the outset of its DP development.

They have had an excellent growth record and as a result of their expansion, they are now creating a new DP Centre to enhance their already excellent service. Major new developments are planned based on an IBM 4331; consequently they wish to recruit an experienced DP professional for the above position.

The successful applicant will be a member of their Senior Management team. He or she must be able to demonstrate proven management skills in an IBM environment, and an understanding of all aspects of data processing is essential.

Suitably qualified applicants should contact our recruitment advisor Michael Mannion on 01-723 4053 for an early appointment.

(5481)



Comcap Resources Limited

Group Offices in ★ London Rome Stockholm Milan Frankfurt Zurich & Oslo

COMCAP RESOURCES LTD
26 Chilworth Street
LONDON W2 6DT 01-723 4053

Computing- Management Services

Marine Research Unit-Somerset

Our small professional Management Services Team at Templecombe, Somerset, is looking for additional specialists to help provide and maintain fast and efficient management information systems for company use. Development work includes accounting systems, administration, project control and engineering support. Our business is mainly concerned with the application of electronics to naval and marine problems.

Programmer — with a minimum of 2 years in a commercial environment. Background in FILETAB, FORTRAN, ALGOL or COBOL would be an advantage, though not essential. Ref: TEM/214/P

Computer Operator — at least one years experience on DEC equipment, for double day shift work on new VAX 11/780 and associated hardware. Ref: TEM/215/C

In addition to highly competitive salaries, we offer big company benefits including generous help with relocation, where appropriate, to our attractive part of the West Country.

Ring Robin Churchill, Technical Recruitment Manager, on Templecombe (0963) 70551; or write to him, enclosing sufficient career details to form the basis of an interview, at Plessey Marine Research Unit, Wilkinthrop House, Templecombe, Somerset. Please quote relevant reference number.

PLESSEY
electronic systems

18471

DATA PROCESSING

£16,000 to £26,000 p.a. after tax

Experienced Professionals and Managers required for long-term assignment in South Africa or France (12 to 36 months)

A) D.P. PROJECT LEADERS
Good track record in management of large-scale D.P. Projects

B) PROGRAMMER/ANALYSTS
Min. 5 years' experience in Commercial Systems. Preferably in large enterprises.

C) GRAPHICS EXPERT

D) DATA BASE MANAGER
Knowledge in use of Data Dictionary for control of Data use in ownership.

Please send early replies with C.V. and tel number to:

G.E.C.I.
10 Rue Alberic Mognard
75016 Paris - France

18485

SENIOR SYSTEMS PROGRAMMING OPPORTUNITY IN LEEDS

The Leeds Permanent Building Society is seeking to recruit an experienced Senior Systems Programmer to join the Management Services Team at its Leeds Head Office.

The Society has a large computer centre in Leeds and terminals in more than 300 branch offices throughout the UK. The MVS operating system supports both IBM 3031 processors at the centre and plans are well advanced for major changes to the central site and on-line systems.

SENIOR SYSTEMS PROGRAMMER
A vacancy exists for a Senior Systems Programmer with several years sound experience of large IBM computer installations. A detailed understanding of MVS is particularly relevant. A knowledge of CICS, telecommunications software and data base techniques is also applicable.

This is an excellent opportunity to extend technical and management expertise. The successful applicant will play a leading role in this demanding and progressive installation.

BENEFITS
A competitive salary is offered and training will be provided on a continuing basis. A wide range of additional benefits include a staff mortgage scheme, pension, life assurance and sickness schemes, subsidised staff restaurant, and sports and social facilities.

Interested applicants should write briefly or telephone Leeds 38181. Ext. 430 for an application form.

J. Clark MBIM,
Personnel Manager,
Leeds Permanent
Building Society,
Permanent House,
The Headrow,
Leeds LS1 1NS.

**the
Leeds
PERMANENT
BUILDING SOCIETY**

Enquiries will be treated in the strictest confidence. Envelopes should be marked "Staff Confidential".

SALES

£13 - £40,000

Small business systems to large mainframes

We are currently talking to experienced sales executives on behalf of 7 major household name suppliers. With over 30 opportunities available we need to talk to a lot more.

Ring me, Richard Geckel, on the number below and tell me what you could offer to some of the best known names in the industry.

18511

EXECUTIVE FACILITIES LONDON LTD
01-404 4855

Warrington Industrial Training Trust Limited is seeking a

MANAGER

£14,000 p.a. plus £1,000 car allowance

to launch and run a:

BUSINESS PROMOTION BUREAU

This new venture is to be located in offices in the Town Centre of Warrington and is to be a separate operating unit of the Company. It is financed by public authorities and private enterprise. There will be a real need of from public authorities and private enterprise. There will be a real need of from public authorities and private enterprise.

The object of the Unit is to find, persuade and advise people to set up a business in Warrington and also to offer every assistance to ensure that businesses who find themselves in difficulty return to work.

Candidates should preferably have some professional qualification or a commercially oriented degree. They should be highly motivated, with a good knowledge and experience of the business world. Specialised professional advice will be available to the successful applicant and his potential clients but the success of this venture will stand or fall on the ability of the offer to go out and attract those clients.

Relocation expenses are payable in appropriate circumstances.

Write or telephone for application form to:

CHALMERS, DUFFY & CO.
6 Warrington Street, Warrington
WA6 9JY

18482

PROGRAMMERS! KESTREL WANT MORE...

Kestrel Data Storage & Management, Specialists in providing sophisticated storage and cataloguing services for the oil exploration industry.

The company is expanding and requires more programming staff to work in a small friendly Computer Department on a CMC Reality Level 4 Mini Computer.

The Computer Department is situated at our Southwell SE1 H.Q. which is near main B.R. and L.T. commuter routes.

SENIOR PROGRAMMER
8-10k a.a.o.

Approximately 4 years' experience required of which some must be of using BASIC on Mini Computers.

PROGRAMMER 6-7k

Minimum 1 1/2 years' experience as above.

JUNIOR PROGRAMMER 5-6k

Minimum 6 months' experience as above.

Benefits include L.V. and Profit Sharing Scheme. For all the above posts, experience on CMC Reality Level 4 will be a major advantage. Call Valerie Shackleton on 01-434 8844. No Agencies please.

GMW/C

Sales Executives - RUCAPS

★£20,000 p.a. + car

We are currently looking for experienced computer graphics Sales Executives to undertake U.K. sales of one of our specialist systems.

RUCAPS is a unique computer aided design system specially created for Architects. It is one of the only full scale systems available allowing for frequent and accurate updates. Its absolute consistency, cost-effectiveness, flexibility and user-friendly features make it greatly in demand.

Based in Salford, you will receive extensive product and company training. We pay an above average basic salary and the commission, based on sales of this highly attractive system, will give you the opportunity to earn £20,000 p.a.

Sales Executive - AUTOPROD
★£18,000 p.a. + car

The AUTOPROD system is well known as a system allowing designers to work in three dimensions right from the start of a project. We are looking for an individual who already has experience of selling 3-D computer graphics. A minimum of 5 years' experience is essential and your territory will encompass the whole of the U.K.

Full product and company training will be provided and our salary and commission package should produce a total remuneration of £18,000 p.a.

Berkhamstead offers a wide range of schools and housing and the offices are close to a British Rail Station. All vacancies are open to men and women.

If you would like the opportunity of joining a growing company with a young go-ahead outlook please write giving full personal and career details to:

GMW/C
THE ARCHITECTURAL COMPUTER SPECIALIST LTD.

A. R. York, Sales Director, GMW/C Computers Limited, 100, Mill Lane, Berkhamstead, Herts. SG8 9JY

18483

**PETER COLLETT
AND
ASSOCIATES**

ANALYSTS/PROGRAMMERS HEWLETT-PACKARD

**£7-11,500
+ CAR SCHEME**

Our Client is a leading software house specialising in the marine and re-insurance field utilising Hewlett-Packard computer systems. Due to increased demand for their services they now require additional junior and senior computer professionals to work in analyst/programmer or software support roles.

The minimum requirement is 18 months commercial experience in BASIC, SPL, FORTRAN or any other block structured language, together with a good academic background. Any knowledge of Hewlett-Packard systems and software would be advantageous but not essential as training will be given where necessary. Candidates can expect a high degree of client contact and must therefore be professional in both appearance and attitude. Some travel will be required between the Company's City office and their head office based in an easily accessible part of South Buckinghamshire.

In return our Client offers an excellent starting salary and package which includes an annual bonus, flexitime, pleasant working conditions and company car scheme. If you are self motivated and looking for a challenge in a dynamically expanding environment contact Apex quoting ref. MH/04 for further details.

18384

Apex

Apex Computer Recruitment Ltd
59 Grays Inn Road, London WC1X 8TL
01-404 4821

FIELD SERVICE ENGINEERS London S. Counties (Home Based)

★ HIGH BASIC + O/T x 8/5 = 6 FIGURES
★ PRIVATE HEALTH SCHEME
★ CAR CHOICE

All above benefits are offered by our clients — a major American Manufacturer of double figure growth. New products in (Commercial/Scientific) — high investment programme guarantee further expansion. The continued growth means security and career opportunities in a company that grows its own Senior Staff.

If you have Computer experience and need challenge with real prospects then call Keith Willis.

01-543 4844
ALLTRONICS PEOPLE

DATA PROCESSING MANAGER

We are a large multi site subsidiary of a major international group. We are currently converting our centralised computer facilities to a distributed system and require a Manager to head the department.

The successful candidate will be aged 25-35 and have experience of controlling a busy department using advanced telecommunication techniques.

The salary and fringe benefits reflect the importance of the position.

Please write giving brief career details to:

THE FINANCIAL CONTROLLER
Box No. 1147

18385

SOFTWARE ENGINEERS
Real Time/Assembler/ Pascal
SENIOR PROGRAMMER
PL1/Databases/CICS

to £10K

Gloucester

to £15K

Croydon/Beds/Barks

SALES EXECUTIVES
Packaging/Micros/Peripherals/Turnkey

to £25K

York/N. Barks/Herts/Oxford

SENIOR PROJECT LEADERS
IBM/CL, Manufacturing

to £12K

Wales/Surrey/Gloucester

PREPOST SALES SUPPORT
Mainframe/Mini/Cad/Cam

to £12K

Barks/Middle/London

SENIOR SYSTEMS PROGRAMMERS
OOS/CICS/Teleprocessing

to £13K

Midlands/London/Hornsea

PROGRAMMERS/ANALYSTS
VAX/VMS

\$35-40,000

New York

FIELD SERVICE ENGINEERS
Mainframe/Mini/Peripherals

to £13K

Nailsworth

SALES & MARKETING MANAGER
Video Terminals

to £20K+

Essex

ANALYST PROGRAMMERS
ICL 2966/Databases/Fortran/Pascal

to £12K

London

CONSULTANTS
Banking/Insurance/Commodity Broking

to £20K

Surrey/Middlesex/London

SALES EXECUTIVES
Video Terminal/Cad Cam Systems

to £16K+

North West England/London/Barks

SOFTWARE ENGINEERS
Telecoms/Military/ATE

to £11K

Home Counties

SENIOR SYSTEMS PROGRAMMERS

to £13K

Croydon

PROGRAMMER COBOL

to £10K

North Hants/Sussex

TECHNICAL AUTHORS

to £2K

UK & Europe

PROGRAMMERS
RPG/BASIC

to £10K

London/N. England

PROGRAMMERS
Assembler/COBOL/IBM

to £13K

Essex/Anglia/Surrey

SYSTEMS ANALYSTS & PROGRAMMERS
CAD/CAM

to £13K

Essex

For the opportunity to hear about YOUR kind of job throughout the U.K. telephone:

Sloangate
The Appointments Register

SLOANGATE LIMITED
214 KING ROAD
KINGSTON-UPON-THAMES
SURREY KT2 5RY
J.M. SLOANGATE SERVICE
TELEPHONE: 01-549 6036

18386

Commercial Computer Systems

FIELD SALES MANAGER

£27,000 + car

Our client, a leading manufacturer of interactive commercial/business computer systems wishes to appoint a Field Sales Manager for their thriving North West region (Manchester).

Your prime responsibility will be to lead and develop a team of experienced sales executives marketing an excellent range of systems with an installed value of £20K to £300K, covering a broad spectrum of commercial applications.

To qualify you will be 26yrs to 40yrs with at least three years proven experience in a similar position with a recognised computer organisation.

Alternatively if you are selling hardware/systems, possibly as a large/major accounts manager or a senior sales executive and would like an opportunity to move into management we may be prepared to create a manager designate position.

The importance of this position is reflected in the remuneration package of around £27K, split according to ability, experience and background and will certainly include an attractive live figure basic salary. A car and first class benefits are also included.

For further information in absolute confidence telephone:

Henry Clark on 031-226 6418 (reverse the charges) or write enclosing career details.

Please quote ref: 136/74.

ROYCE

18481

ROYCE RECRUITMENT 22 WALKER STREET EDINBURGH

Computer Service Engineer SAUDI ARABIA

Saudi American Bank, an affiliate of Citibank N.A., is currently undergoing a large-scale expansion of its on-line real time data processing facilities. A computer service engineer is required to assist the existing resident engineers in the maintenance of main frame and terminal equipment.

Applicants must possess HNC, or be CDI graduates or equivalent, and have a minimum experience of one to two years. Experience with Perkin-Elmer equipment would be an advantage.

The position is based in Riyadh, but travel to installations throughout the Kingdom of Saudi Arabia will be required.

The successful candidate will be offered:

- A tax-free salary circa SR102,000 (approx. £16,500) depending on experience.
- Free furnished accommodation.
- One month's paid leave each year, with paid air-fare for all family members to UK or equivalent.
- An additional one week's paid leave each year with paid air-fare for all family members to Athens or equivalent.
- Plus other attractive fringe benefits.
- The selected candidate will be offered a 2-year contract which will be renewable.
- Applications with C.V. should be addressed to: Mr. D.T. Fergie, c/o Saudi American Bank, P.O. Box 833, Riyadh, Saudi Arabia.

البنك السعودي الأمريكي
Saudi American Bank

18480

A Tale of Two Cities

UNIVAC SOFTWARE

Our Client is seeking to recruit several key personnel with good Univac software skills to work on major projects in the exciting cities of Cape Town and Johannesburg. On offer is the opportunity to work and live in this remarkable country either for a 3-year contract period or to settle permanently according to choice and circumstance. Either way, a handsome relocation allowance will be paid, plus airfares and a wide ranging benefits package.

CAPE TOWN, draped around the slopes of Table Mountain, must surely be set in one of the world's most beautiful natural settings. Rich, fertile countryside bordered by superb beaches, and embracing a city offering a unique life style to which our client would like to invite.

A Real Time Specialist, either with a software orientated or applications development background to determine new transaction processing systems utilising TIP and DMS.

OS 1100 Specialist with an in-depth knowledge of, and skills in the installation and support of Univac OS 1100 operating systems and related software. Experience of Distributed, Communications Processor, Telcon software would be an advantage.

Technical, Sales & Management Appointments

Specialist Computer Recruitment International Limited

3 yr Contract
(or permanent)

to R30,000
+ benefits

CAPE TOWN and
JOHANNESBURG

JOHANNESBURG, the pulse of the South African economy, is a thriving centre for business and commerce. Built on the fortunes of the early gold mines, it is well established as the modern day power house for the growth and prosperity of the country. To this marvellous city, our clients would like to welcome an **OS 1100 Specialist** to perform in a similar role to the Cape Town counterparts.

Our clients are offering a superb opportunity to experience life in South Africa and will provide a full relocation package to the successful candidates. A good standard of living is available in South Africa with the climate and cost of living combining to create a very favourable life-style for families and individuals alike.

To find out more, contact our Advising Consultants at SCR International: **Martin Stainthorpe** on 021-236 3781 or **Graham Utton** on 021-236 3781 or Cannock 3782 (evenings and weekends).

MILANOS & INTERNATIONAL
35-37 Great Charles Street,
Queensway, Birmingham B3 3JY
021-236 3781

HOLLAND
Willemsparkweg 92,
1071 HM Amsterdam
010 3120-78047

BELGIUM
Avenue Louise 327,
Boite 4, 1050 Bruxelles
010 322-640 7161/71

SOUTH
James House, 46 James Street,
London W1M 6HS
01-836 0871/488 0481

NORTH
Blackhairs House, The Paragon,
Manchester M3 2JA
061-833 0427

Targa

CITY ANALYST PROGRAMMERS £10-14k + MORTGAGE

A City-based Bank requires an Analyst/Programmer to complement their small, highly active Systems and Programming team. A knowledge of banking systems gained in an AIMS, BASIC + 2 or COBOL environment is needed and experience of Integrated Data / Word Processing systems would be particularly advantageous. This is a first-class opportunity to widen your career and enjoy a particularly generous salary and benefits package.

S. NERTS TECH MANAGER + PROGRAMMER to £11,500

Our client, heavily committed to development with twin POP 11/70s, has vacancies for a Technical Manager and a Technical/Applications Programmer. Future projects include development of Distributed Data Processing facilities and a Communications Network. Both positions require at least 2 years' programming experience with BASIC + 2 under RSTS/E and a technical understanding of the RSTS/E system, particularly relevant for the Managerial position. A fully comprehensive benefits package supplements the basic salaries.

LON ANALYST PROGRAMMER £10,500

An outstanding opportunity has arisen within a newly-formed installation running an IBM 4331 utilising CICS-COBOL and OL1. For the successful applicant this represents an ideal chance to really contribute at the early stages of systems development within a small team. Our clients will appreciate a mature and flexible approach to work and ideally some experience of the relevant software.

W. LON ANALYST PROGRAMMERS to £10,000

Several situations have been notified recently around WEST LONDON for IBM COBOL programmers and Analyst Programmers. From 18 months' upward experience is required and 3 of the sites offer training in CICS and OL1. A general Commercial or Financial background would be advantageous for applicants seeking a new environment in which to expand their skills.

WEST LONDON BORDERS ANALYST/PROGRAMMERS to £10,000

An opportunity to take a prime role in the design and implementation of major on-line systems is provided by an expanding West London manufacturing company. The requirements are for Analyst/Programmers with around 3 years' ICL COBOL and experience of on-line working. The projects include providing a nationwide Distributed Data Processing network, centred on ICL ME29 equipment for the company's manufacturing centres.

RPGII £8-£11,000

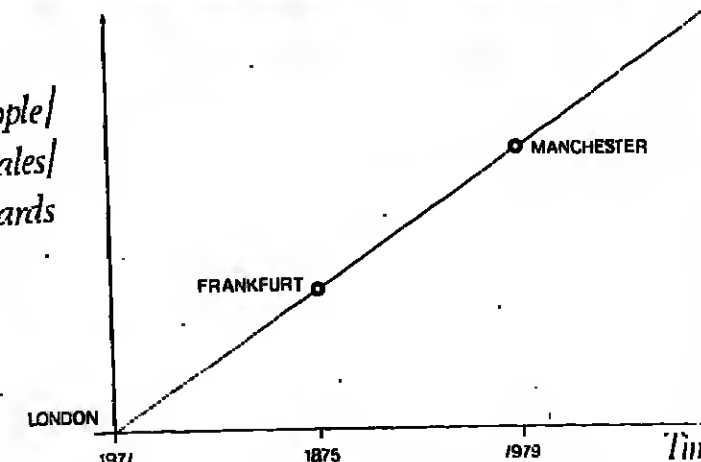
We still have a wide variety of clients needing experienced RPGII or RPGIII people. Openings exist in the City, West End and Home Counties for Programmers or Analyst/Programmers working in a wide range of application areas. The companies include BANKS, CONSULTANCIES, RETAIL, CHAINS and MANUFACTURERS. Whatever your background and experience it is likely that we will be able to help you get more out of it.

TARGA COMPUTER SERVICES
6 LIVERPOOL STREET
LONDON EC2M 7NH 24-HOUR
01-283 9941 ANSAPHONE
10 Lines (0506)

DAI

GROW IN PROCESS CONTROL

People/
Sales/
Rewards



In 11 years DAI has grown to be a leading international consultancy and software house specialising in the expanding field of industrial application of computers. To continue this growth we need more people with at least 2 years good experience in this area. We need analyst/programmers, systems analysts and project leaders in all 3 offices.

Our growth will bring you growing rewards which include a salary up to £13,500 in UK, more in Germany, profit sharing, private medicine and much more. There will be opportunities to travel and work in different locations with our customers as well as in-house on our own systems.

No matter what your software or machine background, as long as you have experience of industrial applications please talk to

GRAHAM ELSE or GRAHAM GILMORE on 01-734 5486
DAVE McLEOD on 061-436 3122
ROY STEDMON on 010-49-6102 38071

Alternatively, write to:

Digital Applications International Ltd.,
Axtell House, 24 Warwick Street
London W1R 5RB

COMPUTER MANAGER IBM S/34

£12,000

We are a successful and expanding company in the food industry and need a computer professional to establish and manage the installation of a System 34. This will prove an exciting opportunity for someone of proven ability who will be totally responsible for designing and implementing a range of systems which will eventually embrace all major commercial activities within the company. A thorough knowledge of RPG/IBM and the ability to effectively communicate at all levels is required. Benefits include private medical insurance, pension scheme and relocation allowance where necessary.

Please write with full C.V. details or telephone for an application form, Charles Drake, Hygrade Maats Ltd., Latona Road, London SE16. Tel: 01-732 8711.

S.E. LONDON

MEDICAL RESEARCH COUNCIL
INSTITUTE OF HEARING RESEARCH

SCIENTIFIC APPLICATIONS PROGRAMMER

The Medical Research Council has a vacancy for a Scientific Applications Programmer at the Headquarters of the Institute of Hearing Research on the campus of the University of Nottingham. The Institute performs multi-disciplinary research on hearing and deafness. The person appointed will provide programming support on Mini- and Micro-Computer Systems for a range of scientific projects including data-base organisation for audiological surveys, and Real-Time interactive control supervised by a Senior Programmer, and will eventually assume responsibility for the day-to-day management and security of data on a twin-processor DEC POP II system.

Applicants should have a working knowledge of Fortran or an applied language and have proven skills in developing and documenting applications programs. Experience on one of the RISC/11 MACRO-11, CPN, Z-80 Assembler, Real-time process control, Signal Processing, Data-Base Management. An appointment will be made on the Executive Officer scale (£4095-7247) or the Higher Executive Officer scale (£7476-8164) according to qualifications and experience.

Application forms and further particulars should be obtained from Pamela British, Administrator, MRC Institute of Hearing Research, University Park, Nottingham NG7 2RD. Tel: 0532-223431. Completed applications should be received by May 28th.

SOFTWARE ENGINEERS £13K + car - people who can develop technical concepts to meet business realities across an expanding range of products within the Eng/Defence field.

COMP SALES £14K BASIC + car. Exp. or potential sales ability is needed for this role. Helpful to have had a technical background or worked in military field.

FIELD ENGINEERS £8500 + car - this role requires engineers to cover area from south London to Midlands. Working mainly on large IBM systems.

Ring Gillie Pateman on: 01-491 3438
NETWORK
18 James Street (0404)
LONDON, W1

EXPERIENCED PROGRAMMERS UP TO £8,500 P.A.

Career opportunities with ICI Corporate Management Services. The ICI Corporate Management Services Department is located at Wilmow, Cheshire. The Department is engaged in a wide variety of projects using the Company's IBM 370 series of computers. We have two vacancies for Experienced Programmers having two years' experience in the development and support of systems in the Commercial Area. We are looking for people with at least two years' experience in the development and support of programs using PL/I, CICS, ADABAS would be of advantage. Starting salary negotiable between £7,000 and £8,500 depending on your experience and qualifications. Benefits include a contributory pension fund and a profit-sharing scheme. Help will be given with removal where applicable.

For an application form please ring:
STEVE KEMP or SYLVIA YATES on:
ALDERLEY EDGE 832228 Ext. 5268 or 5221

IMPERIAL CHEMICAL INDUSTRIES PLC



DATA PROCESSING MANAGER

S.W. LONDON £15,000+CAR

Required to implement an IBM 4331 for our client a subsidiary of a large banking group. As one of four senior managers responsible to the directors you will play a major part in the running of the company. Initially you will be involved in the selection of software and staff. The site is likely to grow to around 20 staff. To facilitate speedy implementation some packages may be used if found to be suitable. DL1 and CICS are also likely to be used.

Applicants should be aged 30-45 currently holding a managerial position on an IBM mainframe. Some exposure to DOS/VS Realtime and Database systems is essential. For further details please quote: Ref. S/6985

APL ANALYST/PROGRAMMERS

C. LONDON £8-13,000+BENEFITS

An opportunity to broaden your horizons with a leading financial company. As one of many interesting development areas they have established a Personal Computing team who assist users to develop their own solutions either in APL on their IBM 4341 or using microcomputers.

These varied positions involve a good deal of user contact and offer real opportunity for career progression. You should have at least 3 years in D.P., previous experience of APL, a good education and the ability to work on your own initiative. Benefits include free pension, staff restaurant and after qualifying period, staff mortgage and bonus, etc.

Ref. S/7054

ICL ME29 ANALYST/PROGRAMMER

MIDD/UX/SURREY TO £9,500+BONUS

Excellent career opening for an ambitious programmer with 18 months+ ICL COBOL programming experience. Early promotion to management intended, owing to re-organisation within the group and promotion of existing manager.

A wide range of responsibilities will include overseeing the Operations set-up (one operator+date preparation), whilst assisting with complete development of a new on-line accounting system and re-development of other sales/order processing systems. This position requires a versatile, mature character, someone 25 or over, with sound COBOL programming experience. An Operations background and/or RPGII knowledge would be very useful.

URGENT requirement - for full details, quote: Ref. J/7055

For full details, in strict confidence, please contact SIMON BERRY on 01-388 0111 or tonight on 0689 50249.

ABRAXAS

CONTRACT ASSIGNMENTS

Join the growing team of ABRAXAS contract professionals with one of the largest sales teams in London, we always have a wide variety of assignments. We currently have a special need for people with the following technical skills. Positions for Programmers or Programmer Analysts.

LONDON & HOME
COUNTIES
IBM PL1 JACKSON

IBM PL1, CICS MACRO

IBM PL1, OS VS1
IBM IMS COBOL DB.
DC MVS

IBM IMS ADF COBOL
IBM DL1/CICS COBOL
IBM COBOL OS TSO, SPF
IBM IMS ASSEMBLER,
COBOL

IBM DOS VSE ASSEMBLER
IBM IMS COBOL
(SHADOW)

IBM DOS BAL, VTAM,
SYS. PROG.

IBM OS MVS COBOL

IBM COBOL CICS
IBM PL1 ANY ONLINE
IBM PL1 ADABAS
IBM SYS 34 RPG II
IBM SERIES I COBOL EDL

OTHER URGENT REQUIRE-
MENTS INCLUDE:

ICL 2900 IDMS COBOL, DML -
AMSTERDAM
ICL 2900 IDMS & OV TPMS
COBOL
ICL ME29, TME COBOL

ICL MTS MINIMAC COBOL
ICL 1900-2900 VME FORTRAN
ICL DME G2, COBOL, FILETAB
ICL ALGOL & PASCAL

ICL DME G3 COBOL
VAX COBOL OV
PRIME CONSULTANTS -
BELGIUM

UNIVAC 1100 DMS TIP
INTEL 8080 ASSEMBLER
SOFTWARE ENGINEER
PDP RSX11 FORTRAN
DATAPoint, DATABUS

For more information and a confidential discussion, telephone
CLAIRE COOMANSINGH or LYNN PACKARD
of our CONTRACT RESOURCES - TODAY on 01-388 2061

Expand Your Future in Robotics & Factory Automation Systems

GEC Electrical Projects is firmly established in the exciting and challenging field of robotics and factory automation systems. Further expansion and a firm commitment to R & D has led to opportunities within the development team who are totally involved in microprocessor based products.

We would like to meet people capable of working in a small team, often on their own initiative, who have the ability to take development projects from initial concept, via system and detailed design, through to final test and documentation. Activities include continuing design and support of existing products and new product development incorporating both 8 and 16 bit Microprocessors. The technical environment is challenging, with a wide range of laboratory, development system and CAD support facilities.

SOFTWARE ENGINEERS For standard software design from control executive software through to application packages including languages ranging from assembler to Pascal.

These positions call for talented people, qualified to degree level or equivalent, who have the relevant experience in design and industrial applications involving microprocessors.

For an application form, please write to or telephone:

Roger Bicknell,

GEC Electrical Projects Limited

Boughton Road, RUGBY, Warwickshire CV21 1BU.

Tel: Rugby (0788) 2144.

Apply to 1.35

APPLICATIONS CONSULTANTS. ON-LINE SYSTEMS DEVELOPMENT.

We're a medium-sized Insurance Company located in prestige offices at the Whitgift Centre in Croydon.

To help us grow we need Applications Consultants to lead teams of Analyst/Programmers in the solution of a variety of business problems.

Reporting to the Manager, DP Development, you'll be responsible for seeing projects through from initial concept to successful implementation,

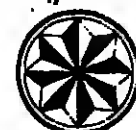
giving ample scope to see ideas turn into reality in a very short time.

We're looking for strong analytical backgrounds and experience of on-line systems and database design, preferably CICS/DLI, plus proven project control. Experience in the insurance industry is essential.

We can offer a salary package of up to £12,000 a year, with an annual bonus, a valuable mortgage subsidy scheme, non-contributory

pension and luncheon vouchers.

If you would like to find out more about these challenging appointments, write to or phone David Steel, Manager, DP Development, Northern Star Insurance Company Ltd., Rothschild House, Whitgift Centre, Croydon, CR9 1NP. Tel: 01-686 5678 (please reverse the charges).



Northern Star

Consultants

To £15,000 p.a. + Car + Relocation
Manufacturing & Distribution Sector
Hampshire

Our client, a company specialising in systems products and services for the manufacturing and distribution sector, both in the U.K. and Europe, is seeking to recruit a number of additional Consultants. Sustained growth has generated these vacancies in the product development, training, installation and customer service groups.

You will be a mature systems professional able to demonstrate a successful track record in manufacturing and distribution and seeking a challenge where success is recognised and appropriately rewarded. The ability to fully protect the company's commercial interests whilst ensuring effective problem solutions for clients is essential. You will be between 28 and 40, a graduate or equivalent and will have obtained your experience with a systems house, a computer manufacturer or the management services division of a large computer user.

Salaries and benefits are highly competitive and geared to the attraction and retention of top quality staff.

Our client is enjoying significant growth and career prospects are excellent.

To apply please contact Brian Porties.

Ferguson Thorley Bowles Associates Limited

International Personnel Consultants
15 Clarence Street, Staines, Middlesex TW18 4SU
Telephone: Staines (0784) 59247 Telex: 8814148

Rediffusion Computers Limited, is one of the leading world suppliers of Videotex and Advanced Office Systems. To maintain our lead, by making our systems even faster, we require a...

System Performance Analyst

... to strengthen our team based at Crawley. We would expect the successful candidate to have worked in a commercial environment and have had experience relating to at least one of the following:-

- Benchmark Selection
- Benchmark Tuning
- Performance Measurement
- Performance Prediction
- System Tuning
- Performance Design

For the right applicant we offer a stimulating working environment where management will be conscious of the importance of your role, as reflected in the attractive remuneration package and other large company benefits provided. Relocation assistance will be available where necessary.

Write with full C.V. to Rob Wilson, Personnel Officer, Rediffusion Computers Limited, Kelvin Way, Crawley, West Sussex RH10 2LY. Telephone Crawley (0292) 31211 ext 278.

REDIFFUSION Computers

A Member of the Rediffusion Group of Companies

WEST COUNTRY

PROJECT LEADERS

ANALYSTS

PROGRAMMERS

SENIOR OPERATORS

COBOL essential and at least one of:
*MVS
*CICS/DLI (Training given)
*Manufacturing Systems
*Structured Development Techniques
*Project Management

Join an international leader in the manufacture of wellhead and other equipment for the world's oil and gas industries.

Tremendous experience; scope for innovation; excellent rewards; relocation expenses available.

TRAINEES
If you have a minimum of 2 years COBOL experience, we will offer full training in CICS and DLI.

INTERESTED?
We think you will be.

Speak informally to Chris Sadler or Andrew Perry on Nailsworth (045-383) 3311

Alternatively write or phone for an application form to The Personnel Manager, McEvoy, Woodchester, Stroud, Glos. GL5 5EY.

NEW IBM 4341

FOR THOSE WHO THINK THAT GLOUCESTERSHIRE IS MORE FLOWERS AND SHRUBS THAN OIL AND GAS.

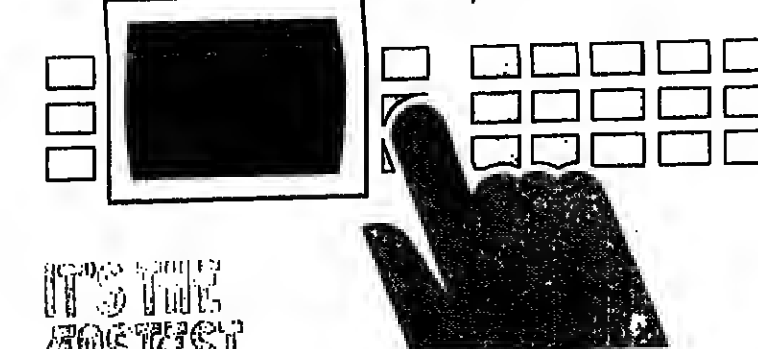
MCEVOY

SOFTWARE PROFESSIONALS

Auto Teller Machines—the out-of-hours banks made possible by advanced microprocessor technology—are crapping up in High Streets and city centres all over the country. The majority of them have been designed, developed and manufactured by NCR—suppliers to Nat West, Barclays, Midland, Yorkshire to name a few.



Auto Teller Machines are growing faster than any other kind of computer terminal or minicomputer, much faster than the DP industry as a whole. NCR, one of the world's largest computer companies has just been declared the world leader in Auto Teller Machine installations in an independent report—and we're now poised for even greater growth over the next few years.



IT'S THE FASTEST WAY TO GET YOUR CAREER GROWING

We're looking for software professionals who wish to further their career in a high growth high technology company with unlimited potential. Depending on experience and qualifications starting salaries can be anywhere between £6,000 and £12,000. Our Software Engineering Group is involved with the development of Microprocessor controlled devices

- Operating software
- Communications systems

from early feasibility to product release.

MOVE FAST AND JOIN NCR IN DUNDEE

Scotland's North East enjoys a healthy, growing economy well positioned to satisfy your demands for a high-quality lifestyle. Sporting and recreational facilities are outstanding, including some of the finest watersports, golfing and walking in the UK. Geographically, Dundee is situated within easy striking distance of both the Highlands and Edinburgh with its excellent civic and cultural amenities. Generous assistance with relocation is part of the benefits package.

Please write with full career and personal details or phone for an application form to: Mr I Hume, Manager—Employee Relations,

NCR (Manufacturing) Ltd, Kingsway West, Dundee DD2 3XX. Tel. (0382) 60151.

Apply by 1.5.82

CONTRACT STAFF SERVICES

by **TRIDENT Computer Services**

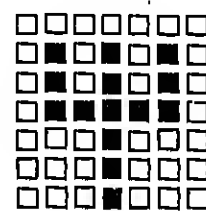
High calibre computer staff represent a substantial investment and DP management are continually faced with the problem of maintaining the delicate balance between a realistic, economical permanent staff establishment and coping with irregular eventualities such as:

- ★ Additional manpower requirements over a limited period for development or conversion work.
- ★ Once-off specialist expertise not available in-house.
- ★ Temporary cover for indefinable peaks in workload; permanent staff sickness; vacancies in permanent staff positions.
- ★ Releasing permanent staff for other duties.

Situations of this nature are inevitable in the time critical environment of DP installations, but Trident's Contract Staff service alleviates these problems and helps users to contain DP budgets within reasonable limits by fulfilling project requirements when, and only for as long as the expertise is needed.

Trident believes in good client relationships, developed only by combining a responsive service with a truly ethical business approach, and welcomes requests for client satisfaction references.

For Project Management, Systems, Programming and Operations contract staff, with proven ability on all mainframes and a variety of mini and micro systems - CONTACT



TRIDENT
Computer Services

The Parade, High Street, Frimley, Surrey GU16 5HJ.
Telephone: Camberlay (0276) 84252
Telex: 858386

FREELANCE OPPORTUNITIES

Ring Virginia McGraa 01-402 0995

Register now for these and other contracts

PROGRAMMERS

IBM

COBOL MVS London c. £350
COBOL CICS DL/1 London c. £375
COBOL UFO Essex c. £375
COBOL MVS JSP London c. £350
IMS DB/DC ADF Surrey c. £375
PL/1 ADABAS London c. £400
COBOL DOS CICS DL/1 London c. £400
8100 DPCX Assembler Sussex c. £375
COBOL DOS/VSE London c. £350
MVS Systems Programmer Surrey c. £475

ICL

COBOL VME/BTPMS London c. £375
COBOL TPMS IDMS London/Berks c. £375
System 10 Assembler N. London c. £350

Others

PRIME COBOL London c. £400
VAX COBOL Bucks c. £375
SIEMENS COBOL Belgium c. £600
CIS COBOL London c. £375
RSTS BASIC + Herts c. £375
DEC FORTRAN S.E. London c. £450
PRIME FORTRAN Herts c. £400

ANALYSTS

Designer/Analyst PRIME London c. £475
Systems Analysts IBM London c. £450
TPMS Systems Designer Berks c. £450
Analyst, invoicing exp. London c. £425
DL/1 Database Consultant Essex c. £450
IDMS Database Designer London c. £425
Micro Consultants London c. £500
Consultant, accounting exp. Surrey c. £550

IBM — RPGII AND RPGIII SOFTWARE LONDON AND SOUTH-EAST

Altego Business Systems Limited has vacancies for Analyst/Programmer and MAAPICS Consultants to work on its expanding IBM system/23/34/38 business throughout London, the South-East and Europe.

These are long-term career positions which offer responsibility, good financial rewards and the opportunity to enhance your skills and experience. Applications cover the entire spectrum of financial, commercial, industrial and manufacturing activity.

We are particularly looking for people with enthusiasm, ambition, and above all, a professional outlook. We offer a dynamic organisation which recognises individual achievement. The rewards are a generous bonus scheme, six-monthly salary reviews and excellent fringe benefits. All our staff are expected to be flexible both in outlook and geographically.

MAAPICS CONSULTANTS

Applicants should have a Manufacturing or Accounting background with practical experience in the implementation of MAAPICS. Candidates must be well versed in the systems requirement of modern manufacturing companies. Some knowledge of programming and operating the System/34 or /38 is desirable but not essential.

ANALYST/PROGRAMMERS

Applicants should have at least four years' experience in RPG along with a relevant background knowledge of IBM minicomputers. Experience of System/34 and/or System/38 is essential. A working knowledge of COBOL or BASIC would be advantageous.

If you feel that your potential can be realised through the challenge of working within an innovative and stimulating environment with secure prospects and career development, please ring Brian Walker, Barry Whitesman or Chas Barfield on 01-379 8088.

Altego Business Systems Limited
Berkshire House
188-173 High Holborn
London EC1V 7AA
Tel: 01-379 6086

altergo

Freelancers...

In the North of England and Scotland who are available now or in the near future are invited to contact me, Peter Moore, to discuss a variety of interesting and rewarding assignments throughout the UK and overseas.

P-E Computer Services Limited

Winchester House, Fountain Street, Manchester M2 2EP. Telephone: 061 228 3776.

PE

METRA INTERNATIONAL is one of Europe's most successful consulting companies. Headquartered in Paris, the group employs 2200 staff (1400 EOP specialists) worldwide and has annual billings in excess of £75 million.

METRA INTERNATIONAL has a strong and growing reputation in such fields as turn key systems, high level technical consulting and EOP strategic planning. Staff work on a wide range of assignments mainly for Government and leading national and international companies. To underpin its growth, METRA INTERNATIONAL seeks a number of well qualified specialists in 3 areas:

telecommunications specialists

telephone switching systems specialist
network design specialists: for example integrated systems, local area networking, systems implementation.

We are looking for both recently qualified and more experienced engineers to work on leading edge, complex telecommunications projects in France and throughout the world.
Location: Paris.

high level EDP planning consultants

to work on a range of large user EOP planning projects.
definition of EDP goals and objectives
forward work load assessments for major installations
EDP systems structure studies
staffing and implementation planning.

Candidates should have a strong IBM hardware and software background and preferably a good knowledge of one other major supplier, DEC, ICL, etc...
Location: Paris with extended 2 - 3 month travel periods abroad.

top calibre EDP consultants

With at least 8 years top level experience either with a major international consultancy or with a manufacturer. An MBA together with outstanding first degree very desirable. U.S. experience particularly sought. These consultants will address the EDP strategic needs of major multinational corporations.
Location: London and Paris.

For Paris based staff a working knowledge of French is desirable. METRA INTERNATIONAL offer a very attractive career and salary package in a dynamic group. If you feel you can meet our requirements, please send, in the first instance, a brief CV to:

Paul C. TODD - METRA INTERNATIONAL, St. Mary's House, 42 Viceroy Crescent, LONDON SW11 3LB. Telephone: 01 223 76 94

metra consulting

New Systems Posts

S.W. LONDON

As part of the expansion of their computer department, Watneys London Limited is offering three challenging new opportunities to proven high calibre technical staff. Working as part of a small systems team in an exciting business environment, these posts demand a self-motivated and professional approach.

The main computer equipment for development projects is Data General: Nove 4X, M800 Eclipse and MV8000 which run under AOS and ICOS. Additional development work is carried out on microcomputers on a number of company sites. A variety of ON-LINE and BATCH applications are to be developed covering all major business areas.

SENIOR SYSTEMS SPECIALIST c.£11,500 pa

A minimum of 8-8 years of achievement in a Systems Development role is necessary, plus the ability to carry out all stages of project work from initial business investigation through to final implementation. Considerable liaison with management on the introduction of new systems will be required across all areas of the company.

SYSTEMS SPECIALIST c.£9,500 pa

A minimum of 3 years' experience as a systems analyst is required - preferably in a Data General environment. Experience of the design and implementation of commercial systems in a Production, Distribution or Trading environment will be advantageous. A COBOL programming background is preferred with experience of On-Line systems design.

ANALYST PROGRAMMER c.£9,500 pa

Applicants must have a minimum of 3-4 years' experience - mainly in programming - but with some practical involvement in technical design and basic systems analysis. COBOL and On-Line systems experience are essential as is at least one year of Data General experience. Expertise in the use of RPG would be an advantage.

In addition to the salaries quoted, Watneys London Limited has an annual bonus scheme, pleasant working environment and a comprehensive benefits package.

Please contact Mrs. M. C. Hannay, Personnel Dept. for an application form: Watneys London Limited, 14 Mordake High Street, London SW14 6JD. Telephone: 01-878 3434, Ext. 332.



Dep 11/13/82

PRE-SALES SYSTEMS CONSULTANTS BASED CENTRAL LONDON

How will you earn the success you deserve?

With the company installing very large networks?

The one winning the most sought-after distributed processing contracts?

Or the one handling financial applications projects for the largest end-users?

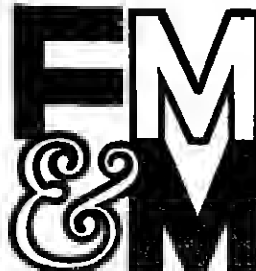
Our client is at the forefront of all three areas. And as one of Europe's largest computer/office systems manufacturers, that's a position which, considering the excellence of its products, the commitment of its staff and the respect its very well known name attracts, is hardly surprising.

Continued success means their order books have never been fuller. This is the expansion that calls for Systems Consultants to play an important part in the company's pre-sales activities.

You will work on some of the very largest and most interesting projects in mini computer software, communications, distributed processing, total office automation and banking and financial applications. Your task, in liaison with the sales team, is to develop one or more of these areas—from initial marketing, client presentation through to installation.

Naturally, your experience would be beneficial if gained in a similar position with a computer manufacturer. However, a software, systems design or project management background would be just as welcome. Though, in any area, experience of communications/large data processing networks is essential. Aged 27-32, you should also be highly communicative and possess the ability to present proposals, succinctly and professionally, to clients and colleagues alike. In return, we offer a package of c£13k + car and a full range of big-company benefits.

The personal success you may seek can never be guaranteed. But, with our client, you can be sure that the opportunity to attain it has never been stronger.



In the first instance, write enclosing a copy of your CV to The Recruitment Manager, Freeman, Mathews & Milne Recruitment Ltd., 15 Grosvenor Place, London SW1X 7SJ or telephone 01-235 2142 for an application form.

ANALYST/PROGS PROGRAMMERS

COBOL AND/OR AIMS BASIC

CITY

£7500/£11000

Our client is a successful Merchant Bank based in the City of London within easy reach of Bank, Monument or Fenchurch Street Stations. Their current hardware consists of Wang VS and PDP 11 computers utilising Cobol and Aims Basic.

The successful applicant will be expected to become familiar with the Wang VS equipment and current applications which are mainly based around administration program development for the Leasing Department. After an initial period of up to one year they will move to the banking division where if necessary full training will be given on Aims Basic and PDP 11 equipment.

Applicants should have a strong programming background with at least two years' experience of Cobol and/or Aims Basic, Basic + or +2. Banking experience is preferable, although not entirely essential as training will be given if other aspects of career upbringing are sound.

This position offers excellent career development opportunities and full banking benefits, including mortgage subsidy and interest free season ticket loan. Ref: R.6090.

Datascene
International
Limited
Sceptre House 169/173 Regent Street London W1R 7FB. Telex: 25851

datascene

01-439 7871

24 hour answer phone

London &

Buckingham Palace

Telex: 25851

computer Engineers

Share in WANG'S billion dollar success

WANG, a
Fortune 500

company, has established
itself as the leading Office

Automation company with a

revenue goal of \$1 billion in 1982. And

the Company's outstanding European

subsidiary is right here in Britain - WANG

(UK) Limited.

WANG's growth has created one of the most exciting

career-development environments in the computer

industry. And now, new opportunities are available for

Experienced Computer Field Service Engineers to support

our extensive London customer base. You would be working on

WANG's wide range of powerful, versatile and user-friendly systems (which

include Word Processing systems, small Business Computers, 'VS' 16 and

32-bit Superminicomputers, Broadband Local Area Network and

Office Automation Systems, with Voice and Image Processing as well as

DP/WP), ensuring a variety of technical challenge which will develop and

broaden your skills and understanding of the latest Technology.

At WANG, we believe in sharing our success with the people who make it

happen, and a top salary and benefits package including a car (the new

Cavalier Hatchback) is just part of our offer. Regular, performance-linked

pay reviews will guarantee recognition and reward for your achievements.

Continued growth will create new career opportunities. On-going

professional training is given, and BUPA, Life Assurance, Pension, and Share

Purchase Schemes are in operation.

Your credentials? Simply a good track record in Computer Field Service

representing a mini- or mainframe company, plenty of drive and total

professionalism. HNC level qualifications would be a useful bonus, but are

no substitute for satisfied customers!

For an Application Form and Product Range Information sheet, call

01-235 4835 (anytime day or night, 7 days a week) and leave your name

and address. Alternatively, please write detailing your career and

equipment experience to: Peter Gorton, Personnel Officer,

WANG (UK) Limited, WANG House, 661 London Road,

Isleworth, Middlesex, TW7 4EH.

WANG

LEADERS IN OFFICE
AUTOMATION

£7,000-£10,000
+ car +
+ benefits

Programmers

Basingstoke

£11,000

(Perm and Contract)

Our client is a rapidly expanding systems house specialising in the development and implementation of interactive systems, utilising sophisticated data base techniques.

A minimum of three years COBOL programming experience is essential plus knowledge of data base applications. Equally important are program design and documentation and the ability to be effective in a project team environment.

Contractors with sound COBOL and preferably knowledge of a low level language are also required for six month assignments. Rates negotiable.

Contact: Brian Postles

Ferguson Thorley Bowles
Associates Limited
International Personnel Consultants
15 Clarence Street, London EC4A 3DF
Telephone: 01-403 1111

myriad

International Bank
Programmer/Analysts

We are seeking people with sound IBM COBOL and RPGII experience to advance their careers within a large international bank. Technically, the successful applicants will:

- ★ gain IBM mainframe and mini experience
- ★ develop interactive database systems
- ★ be trained in analysis

and receive:

- ★ circa £10,000 p.a.
 - ★ 5% mortgage
 - ★ guaranteed bonus
 - ★ free pension contributions
- and many more attractive benefits including a positive career path. As these positions are based in CENTRAL LONDON, please telephone 353 0981 quoting S1/1803 for a confidential discussion.

ASSEMBLER in Essex
Salary Negotiable plus Excellent Benefits

This is an ideal opportunity for IBM ASSEMBLER Programmers to make that important next move to establish themselves on an exciting career future. Our client is seeking additional staff to contribute to an extensive development programme over the next five years. Full use will be made of Database and On-line facilities. They can offer pleasant working conditions, the latest in IBM hardware and software, excellent salaries and benefits, and the opportunity for positive career progression. Telephone Myriad London now and learn more about these outstanding opportunities, or write quoting Reference: E1/1803.

Myriad Appointments Limited

30 Fleet Street, London EC4A 3DF Telephone: 01-403 1111 24 hours
50a London Street, Reading, Berkshire RG1 1SQ Telephone: Reading (0734) 555002 24 hours

Real-Time Software Design

North London

To £9,500

This is a rare opportunity for people with MICROPROCESSOR, MINI-COMPUTER PROGRAMMING or SOFTWARE DESIGN experience to broaden their knowledge and further their career.

A company concerned with the production of high technology products is recruiting additional staff to join a recently formed team to develop ADVANCED SOFTWARE. Plans for the future development of COMPILERS and GRAPHICS systems. For further information please contact our London Office on 01-353 0981 quoting reference N1/1803.

C. London

... COBOL or BASIC ...

£7,000-£11,000

Programmers and Analyst/Programmers, are you interested in

... Utilising the latest minicomputer technology including HP 3000, DEC, Burroughs.

... Developing both commercial and financial on-line DATA-BASE projects using IMAGE, DMS, IDMS, TOTAL.

If you have

... A minimum of two years' COBOL or BASIC programming experience, together with the self-motivation to progress rapidly within a demanding environment.

Then telephone our London Office quoting reference: SE1/1803.

BOX NUMBERS

Box number replies should be addressed to:

Box Number

also Computer Weekly

Quoted House

The Quadrant

Barton, Surrey GU2 8AB

Victoria Appointments Ltd

FOR THE BEST PERMANENT
AND CONTRACT JOBS
IN THE NORTH OF ENGLAND

Victoria Appointments Ltd.

24 Mosley Street, Manchester 2.

Phone: 061-238 7216

12th Avenue, Salford

Home 061-446 0134

(0798)

POLYTECHNIC OF CENTRAL LONDON

SCHOOL OF ENGINEERING AND
SCIENCE

Computer
Aided Design

Opportunity for Science graduates to work on active problems in the integration of Computer Aided Design and Computer Aided Manufacturing. Salary according to qualifications and ability. Salary class £7,000-£11,000.

Knowledge and experience of Fortran and assembly language techniques required.

Details: Dr. D. Ingram, 01-400 8000, ext. 226. Write to: Dr. D. Ingram, 01-400 8000, ext. 226. Write to: Dr. D. Ingram, 01-400 8000, ext. 226.

01-400 8000, ext. 226. Write to: Dr. D. Ingram, 01-400 8000, ext. 226.

01-400 8000, ext. 226. Write to: Dr. D. Ingram, 01-400 8000, ext. 226.

01-400 8000, ext. 226. Write to: Dr. D. Ingram, 01-400 8000, ext. 226.

01-400 8000, ext. 226. Write to: Dr. D. Ingram, 01-400 8000, ext. 226.

THE MEDICAL COLLEGE OF ST. BARTHOLOMEW'S HOSPITAL

COMPUTER SERVICES
MANAGER

(£8,500-£10,500 p.a. inc.)

Responsible for day-to-day operation of the College Computer, supporting standard software packages and providing a user advisory service. Hardware is a PDP 11/44 running RSX-11M.

Knowledge and experience of Fortran and assembly language techniques required.

Details: Dr. D. Ingram, 01-400 8000, ext. 226. Write to: Dr. D. Ingram, 01-400 8000, ext. 226.

01-400 8000, ext. 226. Write to: Dr. D. Ingram, 01-400 8000, ext. 226.

01-400 8000, ext. 226. Write to: Dr. D. Ingram, 01-400 8000, ext. 226.

01-400 8000, ext. 226. Write to: Dr. D. Ingram, 01-400 8000, ext. 226.

01-400 8000, ext. 226. Write to: Dr. D. Ingram, 01-400 8000, ext. 226.

THE HATFIELD POLYTECHNIC

School of Engineering

Lecturer in

Senior Lecturer

in Electronics/

Information Engineering

Candidates should have a good Honours Degree in Electrical/Electronic Engineering or in Computing and the energy and enthusiasm to contribute to undergraduate and postgraduate teaching and research activity. Relevant industrial experience is desirable, but applications from recent graduates will also be welcomed.

Salary: £11,000-£15,000

SL E0837-E11541 (bar) - £12354

Application forms and further details may be obtained from the Staffing Officer, The Hatfield Polytechnic, PO Box 100, Hatfield, Herts, AL10 9AB, or telephone Hatfield 68100, extension 909.

Please quote ref. 487. Closing date: 6 June 1982.

THE HATFIELD POLYTECHNIC

AL10 9AB

AL10 9AB

AL10 9AB

AL10 9AB

